CFR 47 FCC PART 15 SUBPART C
ISED RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

For

IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module
Integrated BT 2.1+EDR/4.2/5.0

MODEL NUMBER: SKI.WB638BU.2_668BU

FCC ID: 2AR82-SKIWB668BU2

IC: 24728-SKIWB668BU2

REPORT NUMBER: 4789861913-1

ISSUE DATE: March 23, 2021

Prepared for

Guangzhou Shikun Electronics Co., Ltd
NO.6 Liankun Road,Huangpu District,Guangzhou,China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch
Building 10, Innovation Technology Park, No. 1, Li Bin Road,
Song Shan Lake Hi-Tech Development Zone, Dongguan, People's Republic of China
Tel: +86 769-22038881
Fax: +86 769 33244054
Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
V0	03/23/2021	Initial Issue	

Note: This report is based on 4789476783-1 which is issued by UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch at June 2, 2020. The EUT had already applied for the FCC ID, the customer changed two kinds of antenna, one is called KTC antenna and the other one called INNO-LINK antenna. So we only added the Radiated Unwanted Emissions and conducted output power tests in this report. For other data, please refer to the original report.

Summary of Test Results			
Clause	**Test Items**	**FCC/ISED Rules**	**Test Results**
1	Peak Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	Pass
2	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
3	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 6.8	Pass
Note: 1.This test report is only published to and used by the applicant, and it is not for evidence purpose in China. 2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >< ISED RSS-247 > when <Accuracy Method> decision rule is applied.			

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Guangzhou Shikun Electronics Co., Ltd
Address:	NO.6 Liankun Road,Huangpu District,Guangzhou,China

Manufacturer Information

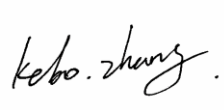
Company Name:	Guangzhou Shikun Electronics Co., Ltd
Address:	NO.6 Liankun Road,Huangpu District,Guangzhou,China

EUT Description

EUT Name	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.0
Model	SKI.WB638BU.2_668BU
Sample Status	Normal
Sample ID	3722611
Sample Received date	March 2, 2021
Date Tested	March 2 ~ 23, 2021

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

Prepared By:



Kebo Zhang
Project Engineer

Checked By:

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo
Laboratory Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Duty Cycle	±0.028%
DTS and 99% Occupied Bandwidth	±0.0196%
Maximum Conducted Output Power	±0.686 dB
Maximum Power Spectral Density Level	±0.743 dB
Conducted Band-edge Compliance	±1.328 dB
Conducted Unwanted Emissions In Non-restricted Frequency Bands	±0.746 dB (9 kHz ~ 1 GHz)
	±1.328dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.0	
Model	SKI.WB638BU.2_668BU	
Product Description	Operation Frequency	2402 MHz ~ 2480 MHz
	Modulation Type	Data Rate
	GFSK	1Mbps
	GFSK	2Mbps
Bluetooth Version	5.0LE	
Rated Input	DC 3.3V	
Permissive Change	C2PC	

5.2. MAXIMUM OUTPUT POWER

Bluetooth Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)
GFSK(1Mbps)	2402-2480	0-39[40]	0.45
GFSK(2Mbps)	2402-2480	0-39[40]	0.35

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2424	22	2446	33	2468
1	2404	12	2426	23	2448	34	2470
2	2406	13	2428	24	2450	35	2472
3	2408	14	2430	25	2452	36	2474
4	2410	15	2432	26	2454	37	2476
5	2412	16	2434	27	2456	38	2478
6	2414	17	2436	28	2458	39	2480
7	2416	18	2438	29	2460		
8	2418	19	2440	30	2462		
9	2420	20	2442	31	2464		
10	2422	21	2444	32	2468		

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel Number	Test Channel
GFSK(1Mbps)	CH 0, CH 19, CH 39	Low, Middle, High
GFSK(2Mbps)	CH 0, CH 19, CH 39	Low, Middle, High

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		QA tool		
Modulation Type	Transmit Antenna Number	Test Software setting value		
		CH 0	CH 19	CH 39
GFSK(1Mbps)	1	default	default	default
GFSK(2Mbps)	1	default	default	default

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

KTC ANTENNA:

Antenna	SN.	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1(BT)	A100-0062	2402-2480	Dipole Antenna	3.5

Test Mode	Transmit and Receive Mode	Description
GFSK(1Mbps)	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
GFSK(2Mbps)	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

INNO-LINK ANTENNA:

Antenna	SN.	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1(BT)	INNO-EWFDKT-237	2402-2480	Dipole Antenna	2.44

Test Mode	Transmit and Receive Mode	Description
GFSK(1Mbps)	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
GFSK(2Mbps)	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

Note:
1. The value of the antenna gain was declared by customer.
2. BT&WLAN 2.4G ,BT& WLAN 5G can transmit simultaneously. (declared by client)
3. The EUT have two kinds of antennas, one is called KTC antenna and the other one called INNO-LINK antenna.

5.7. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BLE	DTS	GFSK(1Mbps)	1Mbit/s
		GFSK(2Mbps)	2Mbit/s

5.8. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	45 ~ 70%	
Atmospheric Pressure:	101kPa	
Temperature	TN	22 ~ 28 °C
Voltage:	VL	N/A
	VN	DC 3.3V
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage.
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/
2	Test fixture	/	/	/
3	AC/DC adapter	HUAWEI	HW-120150E2W	INPUT:100-240V~50/60Hz, 0.5A OUTPUT:12.0V, 1.5A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	N/A	N/A	1	N/A

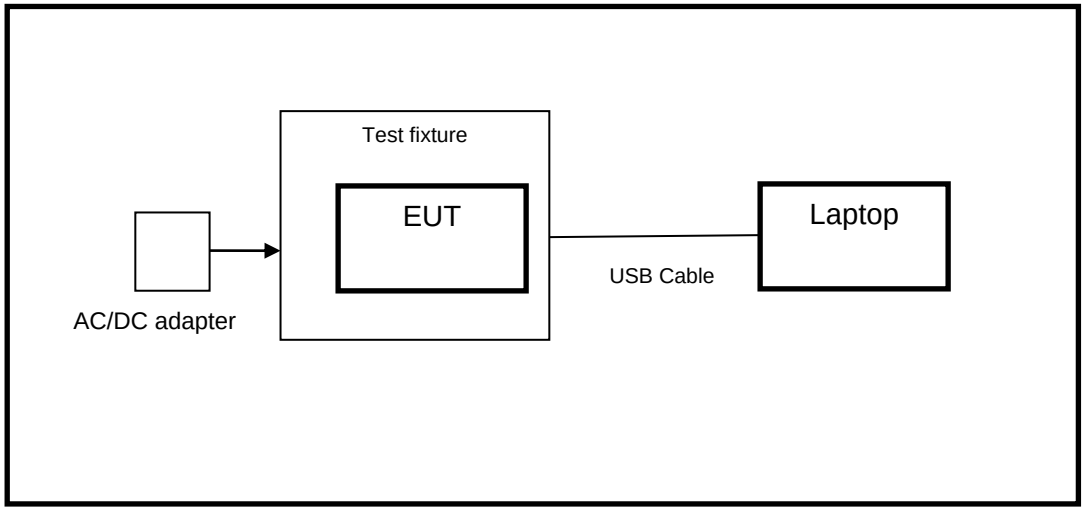
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS



6. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Nov. 12, 2020	Nov. 11, 2021
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 11, 2018	Aug. 10, 2021
Preamplifier	HP	8447D	2944A09099	Nov. 12, 2020	Nov. 11, 2021
EMI Measurement Receiver	R&S	ESR26	101377	Nov. 12, 2020	Nov. 11, 2021
Horn Antenna	TDK	HRN-0118	130939	Sept. 17, 2018	Sept. 17, 2021
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Nov. 20, 2020	Nov. 19, 2021
Horn Antenna	Schwarzbeck	BBHA9170	#691	Aug. 11, 2018	Aug. 11, 2021
Preamplifier	TDK	PA-02-2	TRS-307-00003	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	TDK	PA-02-3	TRS-308-00002	Nov. 12, 2020	Nov. 11, 2021
Loop antenna	Schwarzbeck	1519B	00008	Jan.17, 2019	Jan.17,2022
Preamplifier	TDK	PA-02-001-3000	TRS-302-00050	Nov. 12, 2020	Nov. 11, 2021
Preamplifier	Mini-Circuits	ZX60-83LN-S+	SUP01201941	Nov. 20, 2020	Nov. 19, 2021
High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Nov. 12, 2020	Nov. 11, 2021
Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Nov. 12, 2020	Nov. 11, 2021

Software			
Description	Manufacturer	Name	Version
Test Software for Radiated Emissions	Farad	EZ-EMC	Ver. UL-3A1

Tonsend RF Test System					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
Wideband Radio Communication Tester	R&S	CMW500	155523	Nov.20,2020	Nov.19,2021
PXA Signal Analyzer	Keysight	N9030A	MY55410512	Nov.20,2020	Nov.19,2021
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Nov.20,2020	Nov.19,2021
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Nov.20,2020	Nov.19,2021
DC power supply	Keysight	E3642A	MY55159130	Nov.24,2020	Nov.23,2021
Software					
Description	Manufacturer	Name		Version	
Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System		2.6.77.0518	

Other Instruments					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Dual Channel Power Meter	Keysight	N1912A	MY55416024	Nov. 20, 2020	Nov. 19, 2021
Power Sensor	Keysight	USB Wideband Power Sensor	MY5100022	Nov. 20, 2020	Nov. 19, 2021

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

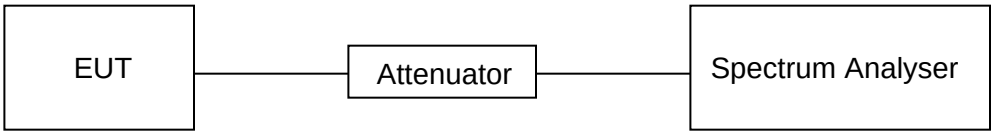
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	51.2%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

RESULTS

Please refer to Appendix B.

7.2. PEAK CONDUCTED OUTPUT POWER

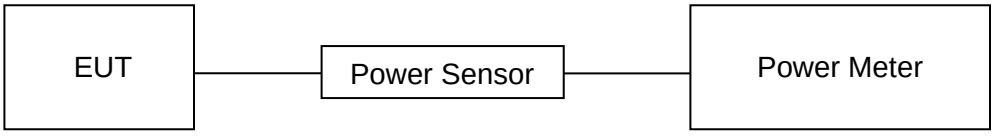
LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED RSS-247 5.4 (d)	Peak Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure peak power each channel.

TEST SETUP



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	51.2%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

RESULTS

Please refer to Appendix A.

8. RADIATED TEST RESULTS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz ~ 1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
9 - 490 kHz[Note 1]	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

Table 7 – Restricted frequency bands[Note 1]

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 – 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 – 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 – 8500	
108 – 138		

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

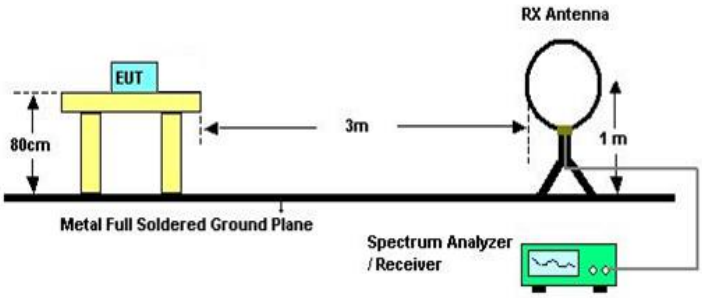
FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

TEST SETUP AND PROCEDURE

Below 30 MHz



The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

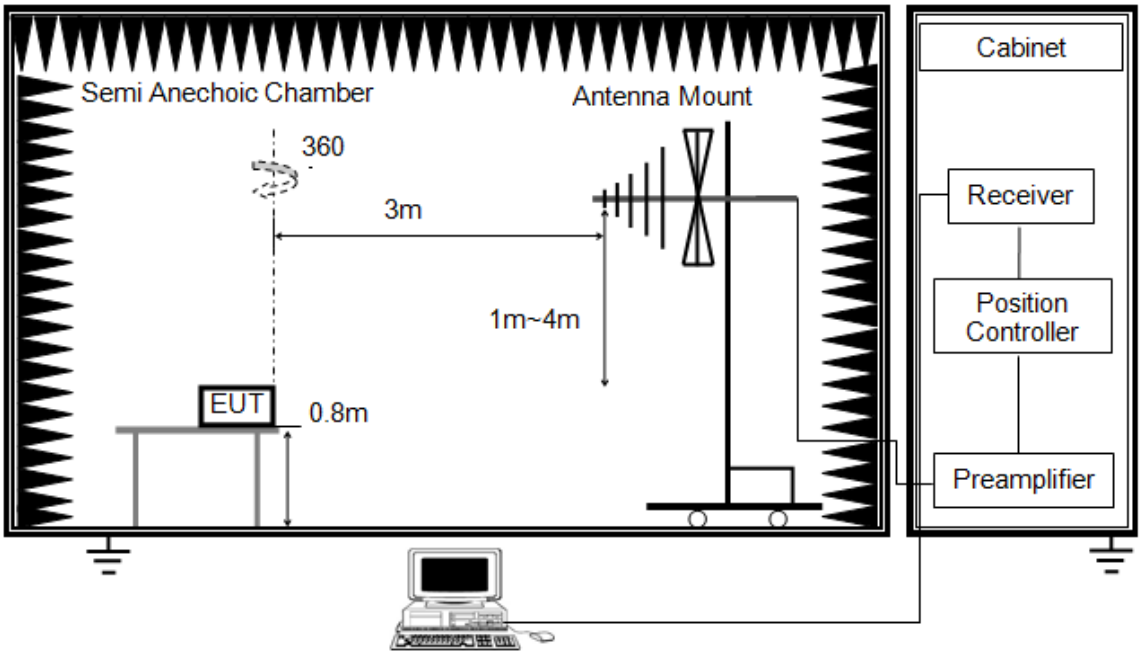
6. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.

8. The limits in CFR 47, Part 15, Subpart C, paragraph 15.209 (a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X KHz resulted in a level

of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

Below 1 GHz and above 30 MHz



The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.

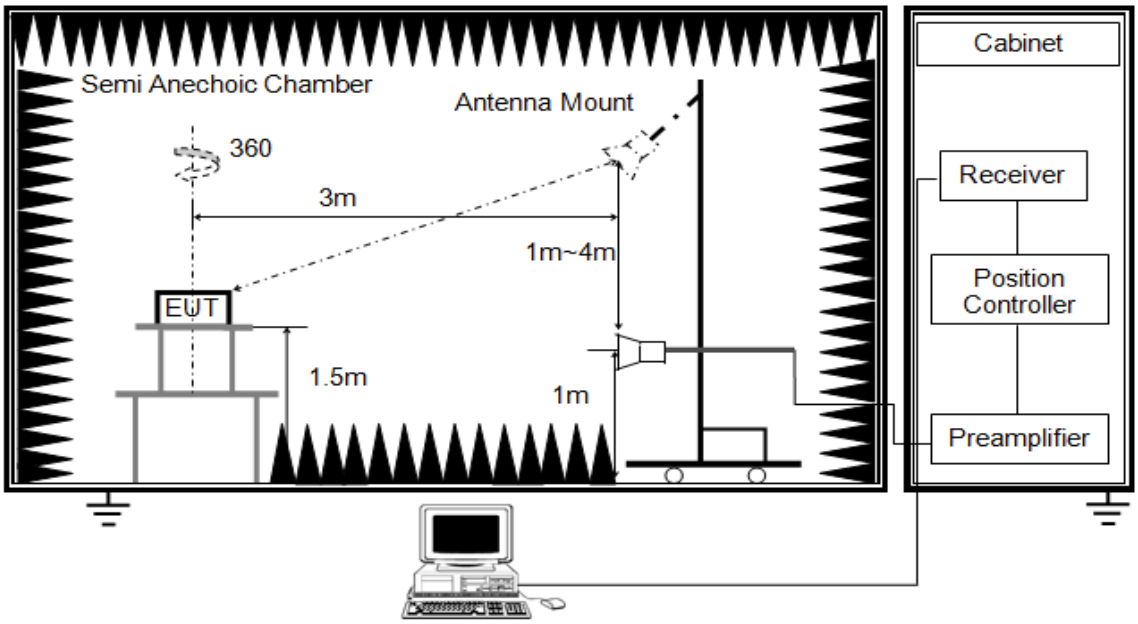
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Above 1 GHz



The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

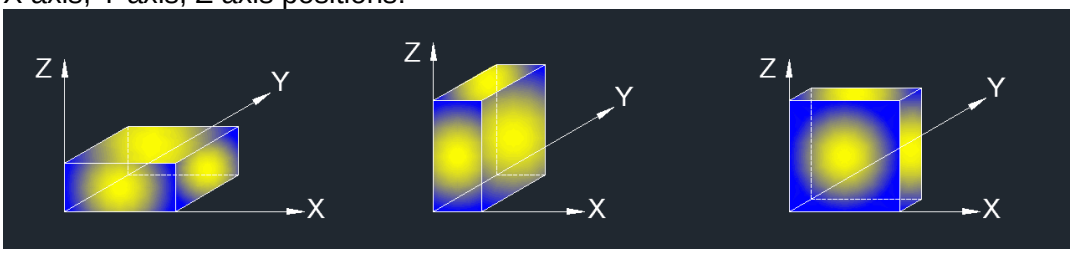
3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: All the EUT's emissions had been evaluated for simultaneous transmission with the other WIFI 2.4GHz, WIFI 5GHz and BT transmitter and there were not any additional or worse emissions found. The worst case data has been recorded in the WIFI test report. (4789861913-3/-4).

TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	DC 3.3V

RESULTS

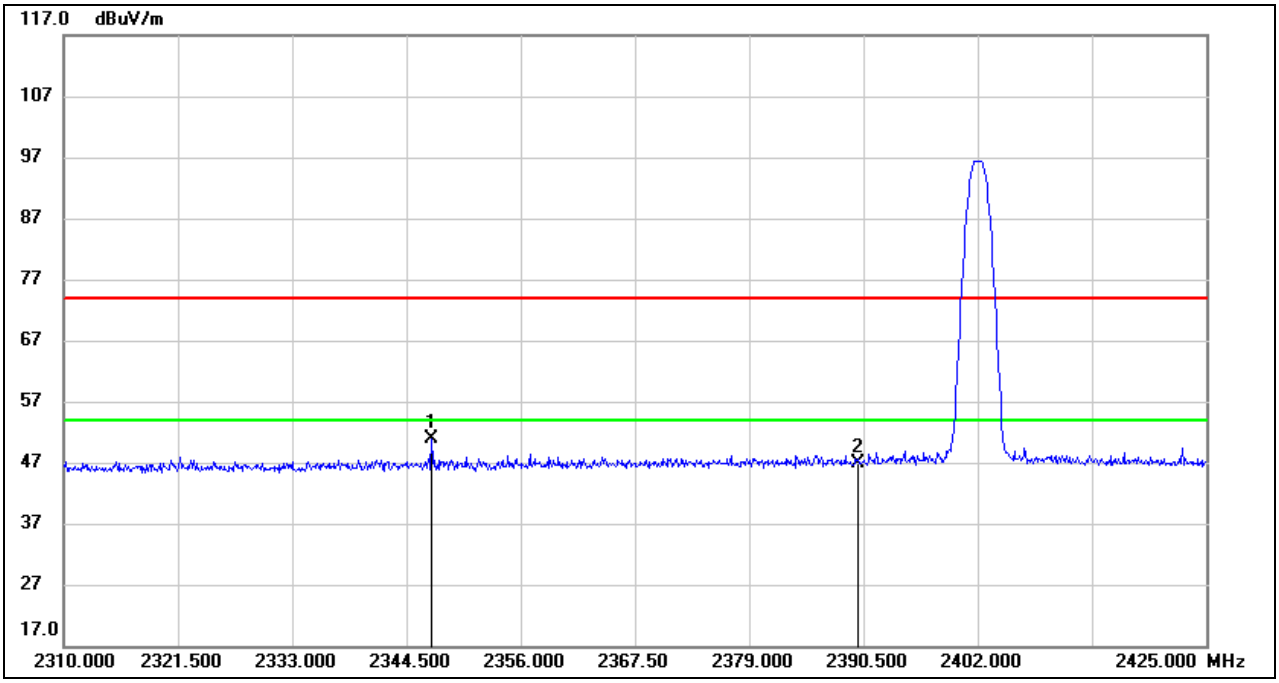
8.1. RESTRICTED BANDEDGE

KTC ANTENNA:

8.1.1. GFSK(1Mbps) MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

PEAK

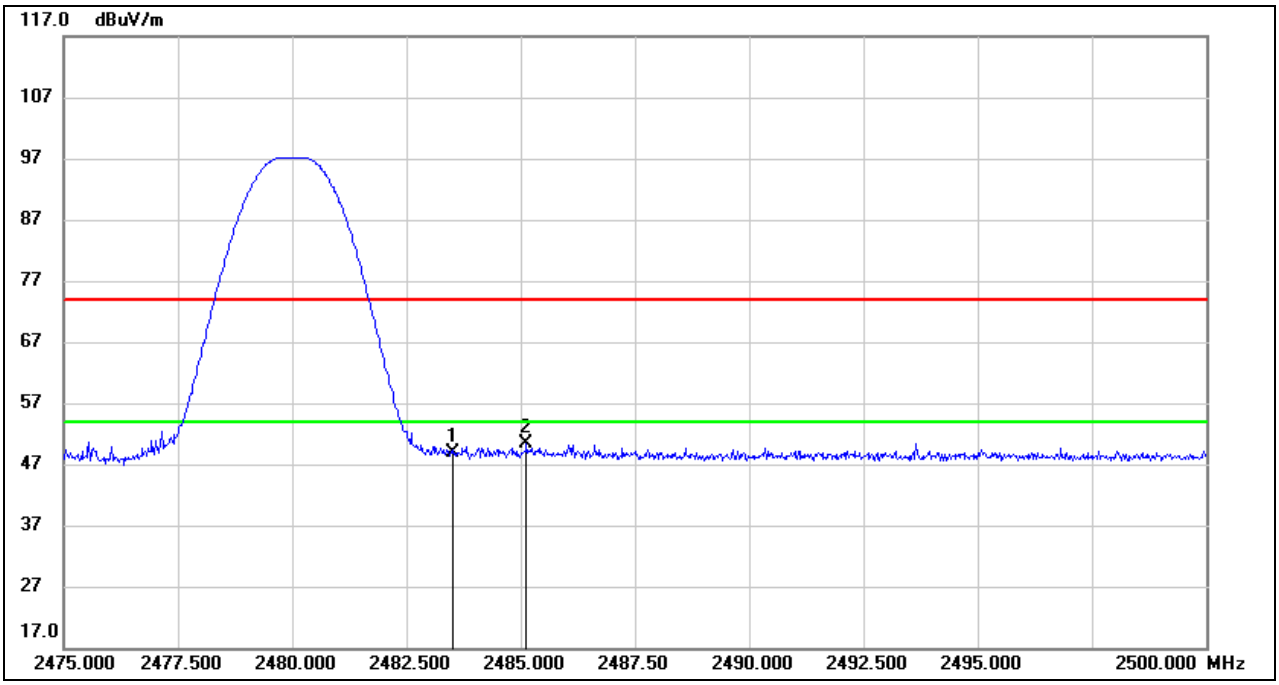


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2347.030	17.92	33.02	50.94	74.00	-23.06	peak
2	2390.000	13.61	33.35	46.96	74.00	-27.04	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.14	33.71	48.85	74.00	-25.15	peak
2	2485.125	16.69	33.71	50.40	74.00	-23.60	peak

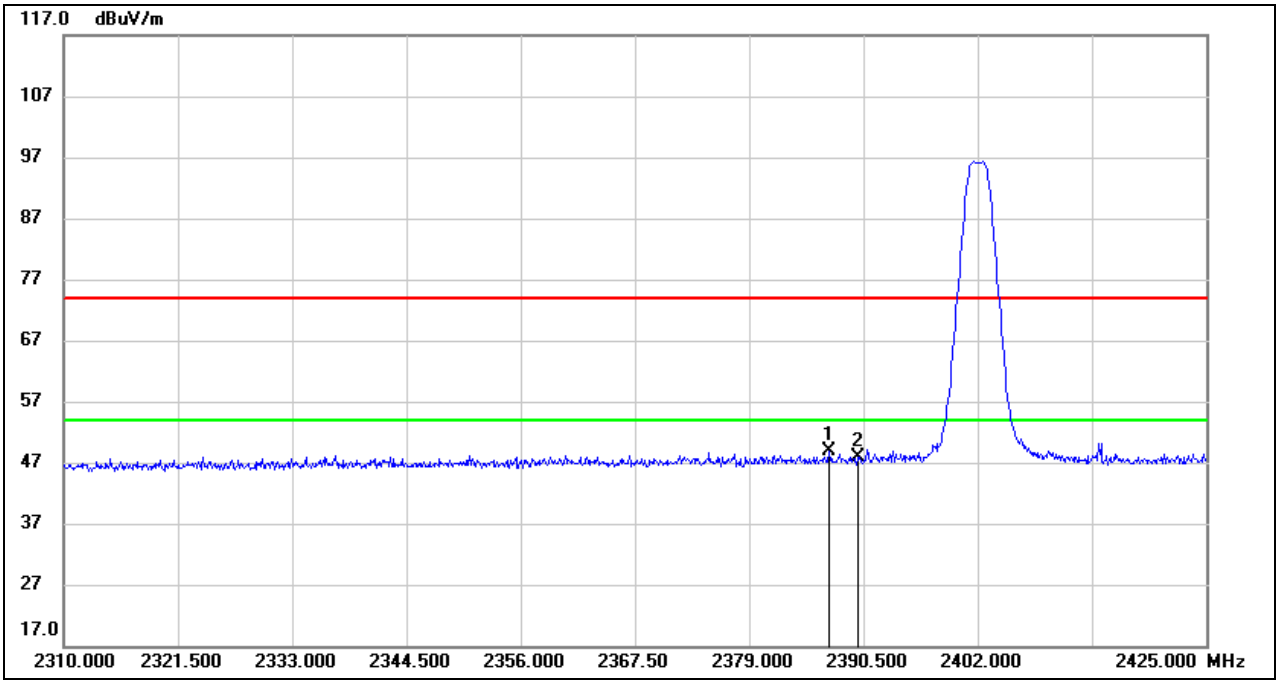
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.

8.1.2. GFSK(2Mbps) MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

PEAK

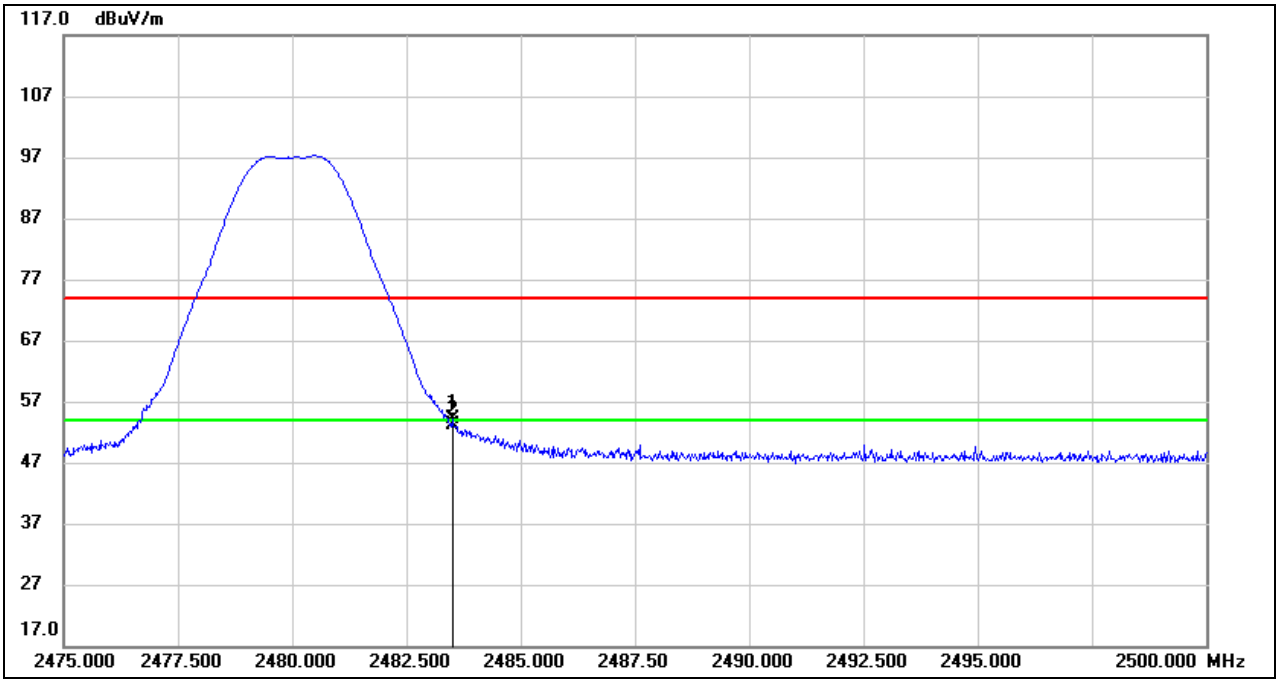


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2387.050	15.48	33.33	48.81	74.00	-25.19	peak
2	2390.000	14.48	33.35	47.83	74.00	-26.17	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

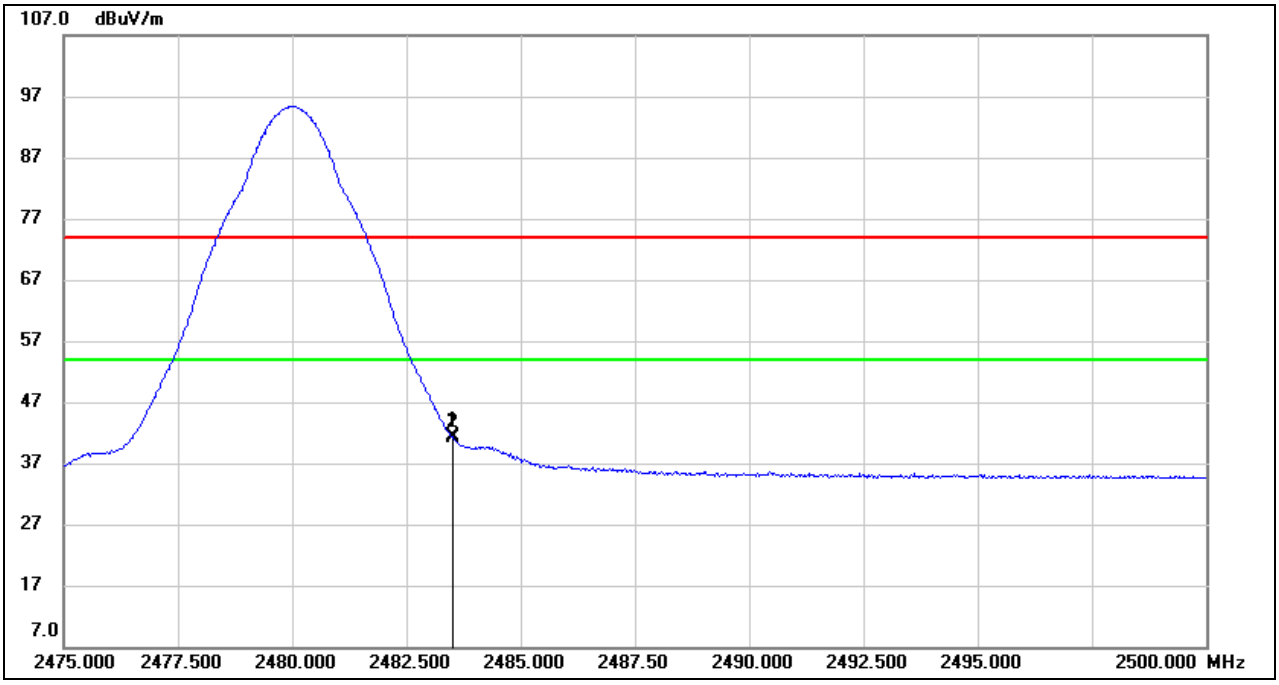
PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	20.37	33.71	54.08	74.00	-19.92	peak
2	2483.525	19.35	33.71	53.06	74.00	-20.94	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	7.62	33.71	41.33	54.00	-12.67	AVG
2	2483.525	7.39	33.71	41.10	54.00	-12.90	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.1.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

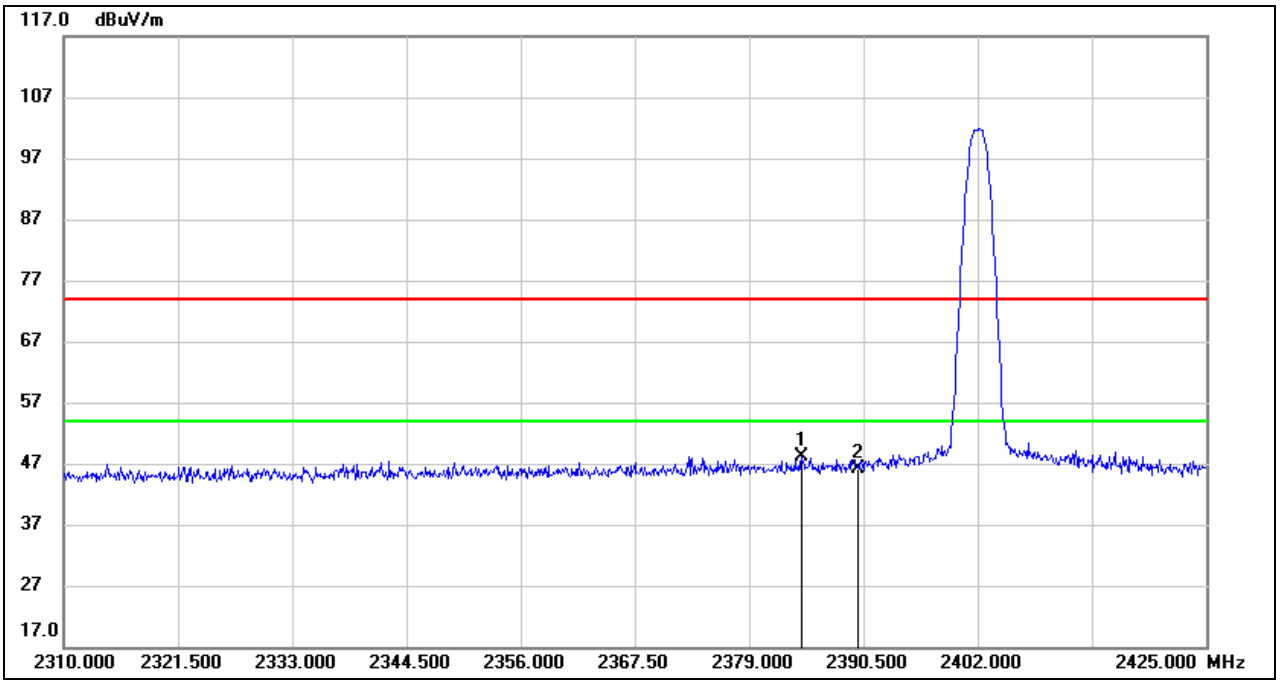
Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.

INNO-LINK ANTENNA:

8.1.3. GFSK(1Mbps) MODE

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK

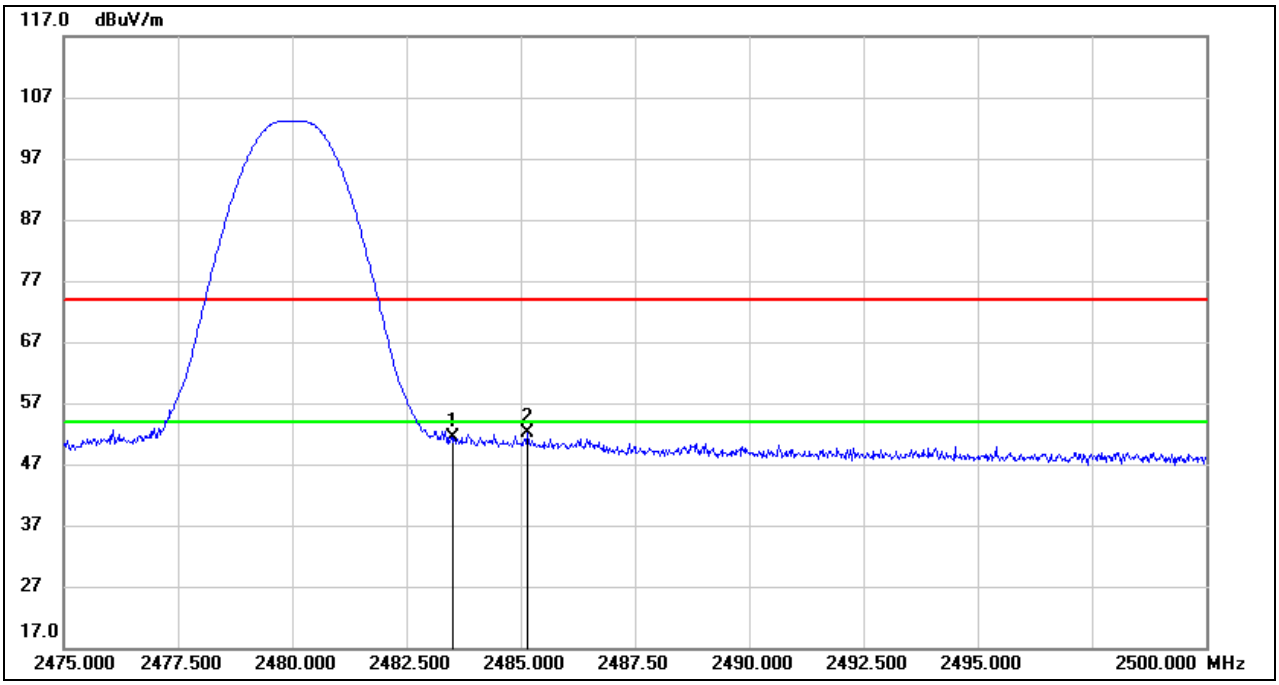


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2384.290	14.86	33.31	48.17	74.00	-25.83	peak
2	2390.000	12.71	33.35	46.06	74.00	-27.94	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.62	33.71	51.33	74.00	-22.67	peak
2	2485.150	18.30	33.71	52.01	74.00	-21.99	peak

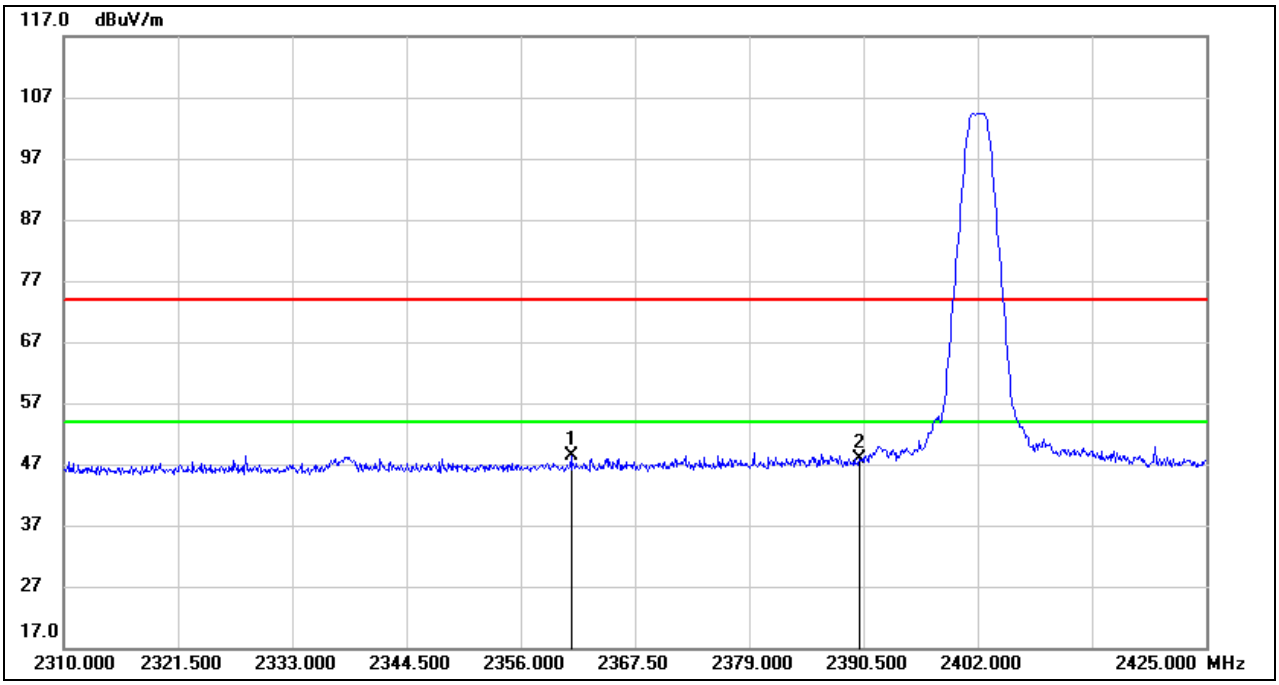
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.

8.1.4. GFSK(2Mbps) MODE

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK

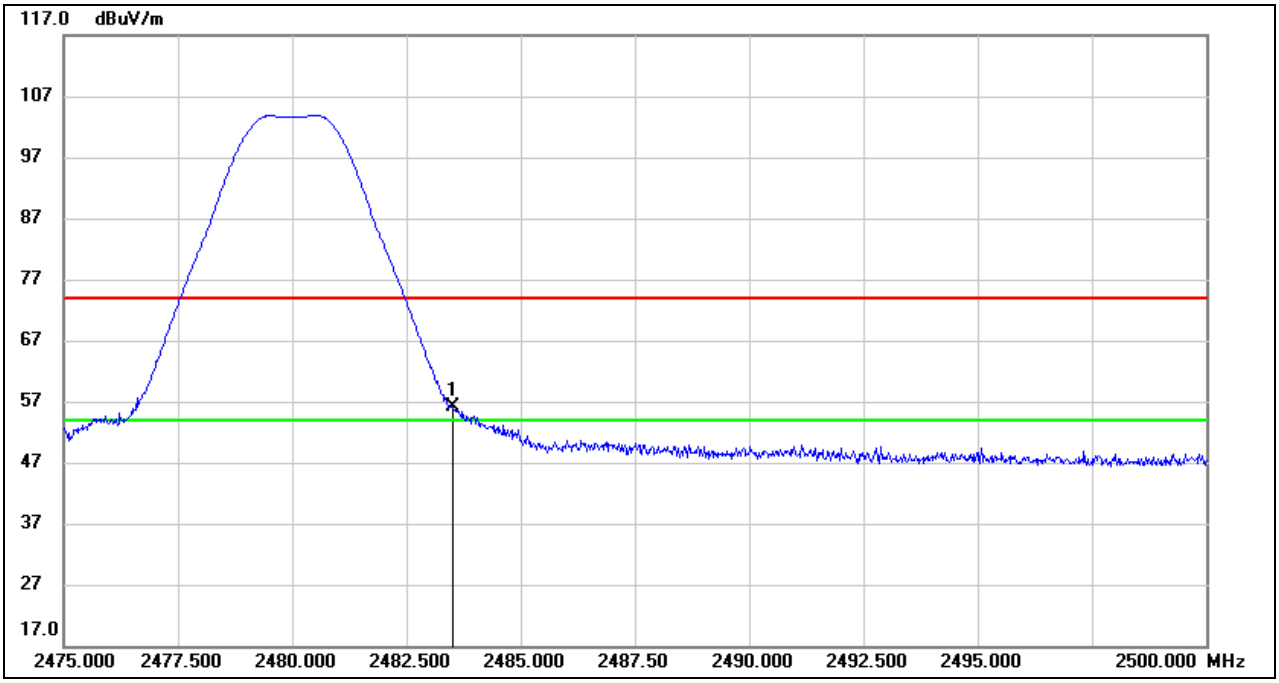


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2361.060	15.27	33.13	48.40	74.00	-25.60	peak
2	2390.000	14.53	33.35	47.88	74.00	-26.12	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

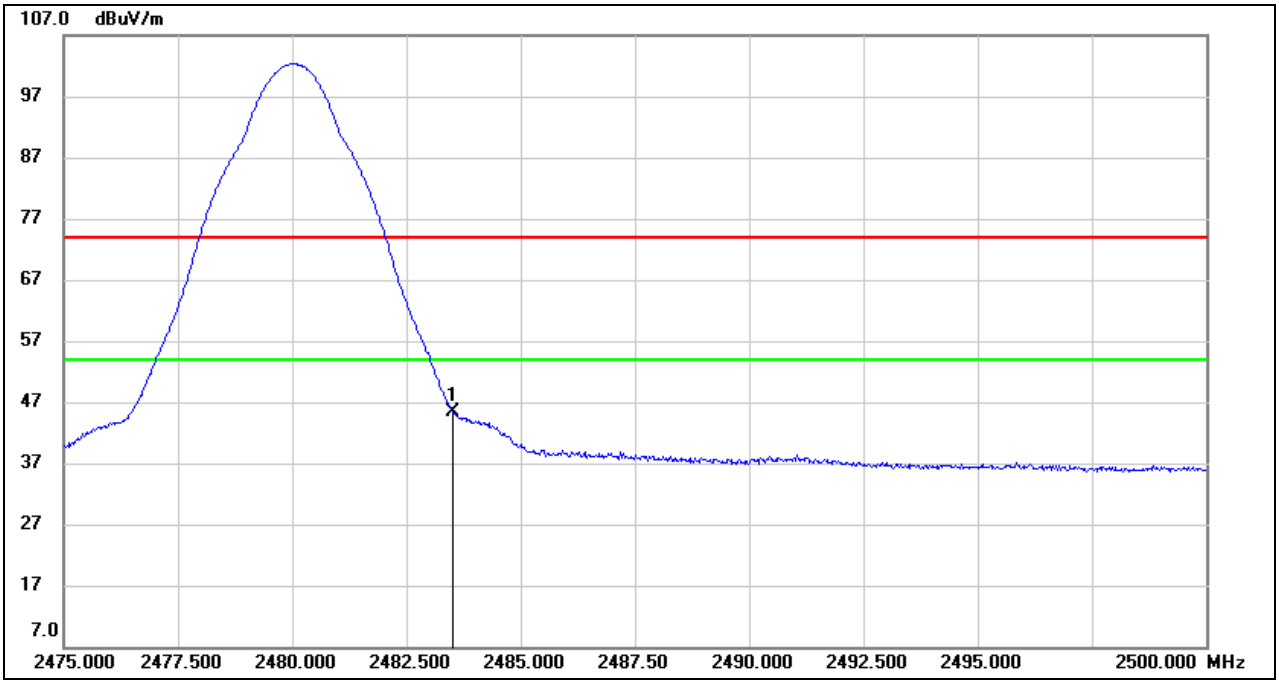
PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	22.44	33.71	56.15	74.00	-17.85	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	11.78	33.71	45.49	54.00	-8.51	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.
5. For the transmitting duration, please refer to clause 7.1.
6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

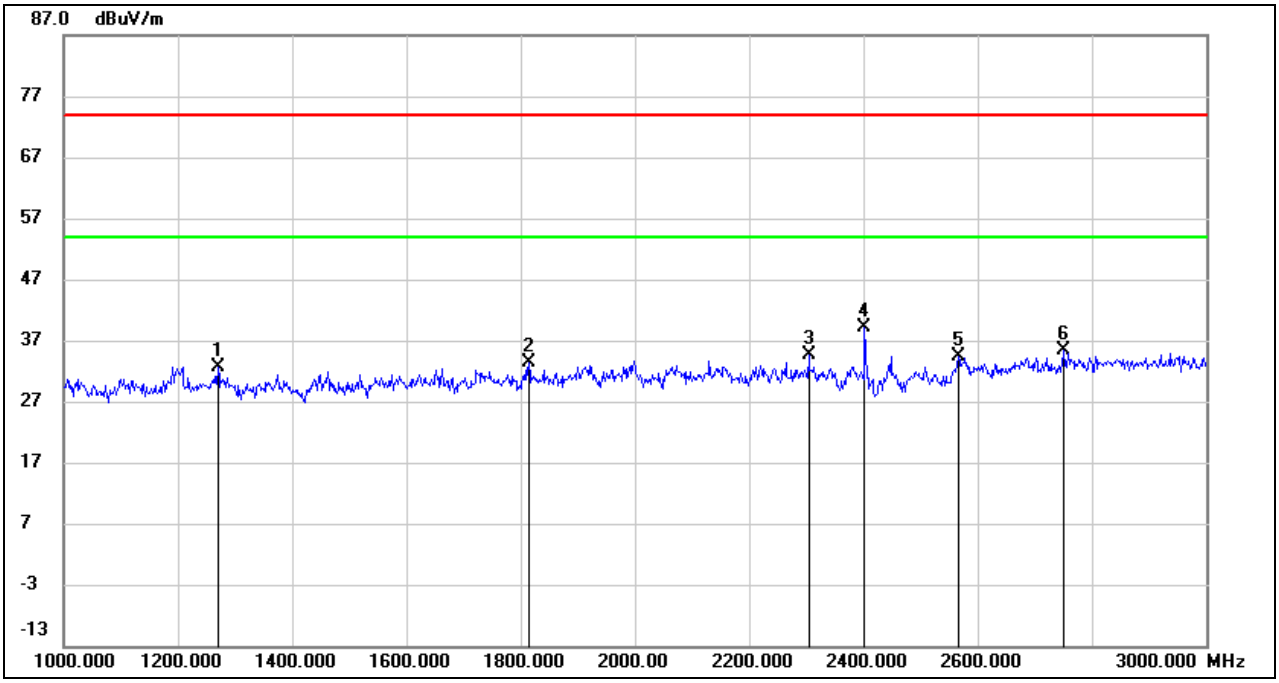
Note: Horizontal and Vertical have been tested, only the worst data was recorded in the report.

8.2. SPURIOUS EMISSIONS (1~3GHz)

KTC ANTENNA:

8.2.1. GFSK(1Mbps) MODE

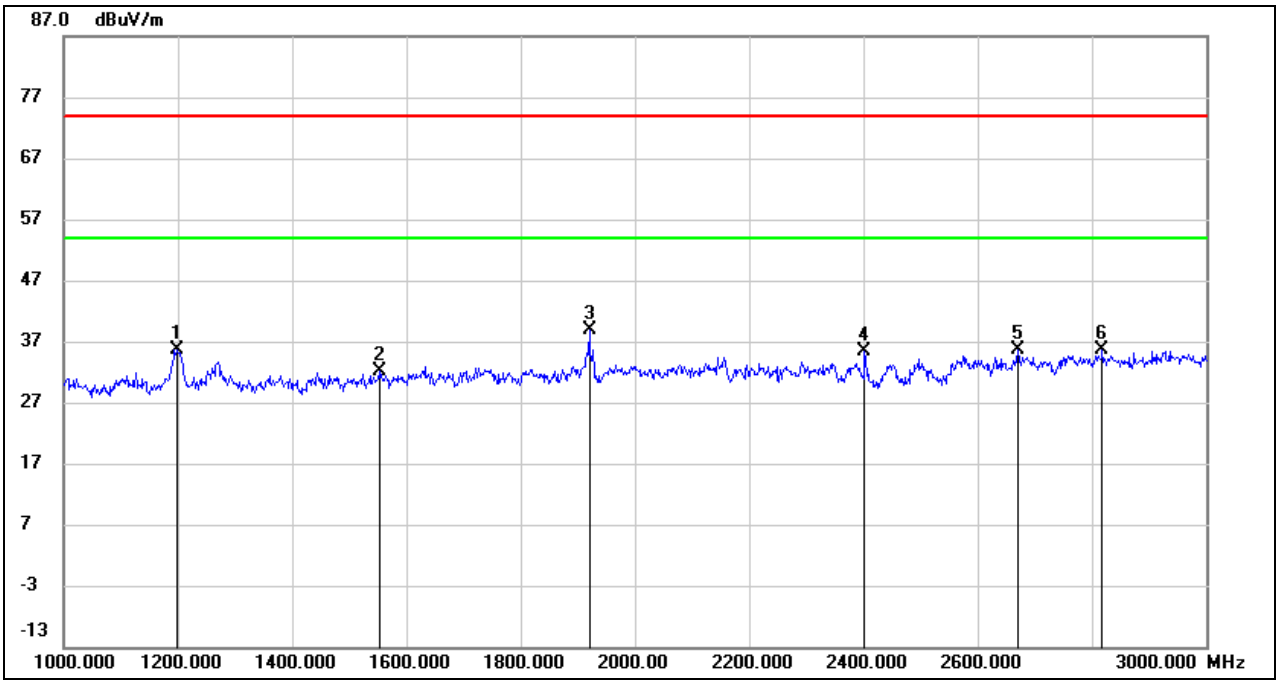
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1270.000	45.87	-13.13	32.74	74.00	-41.26	peak
2	1814.000	44.83	-11.54	33.29	74.00	-40.71	peak
3	2304.000	44.58	-10.01	34.57	74.00	-39.43	peak
4	2402.000	48.83	-9.72	39.11	/	/	fundamental
5	2566.000	43.36	-9.07	34.29	74.00	-39.71	peak
6	2750.000	43.42	-8.06	35.36	74.00	-38.64	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

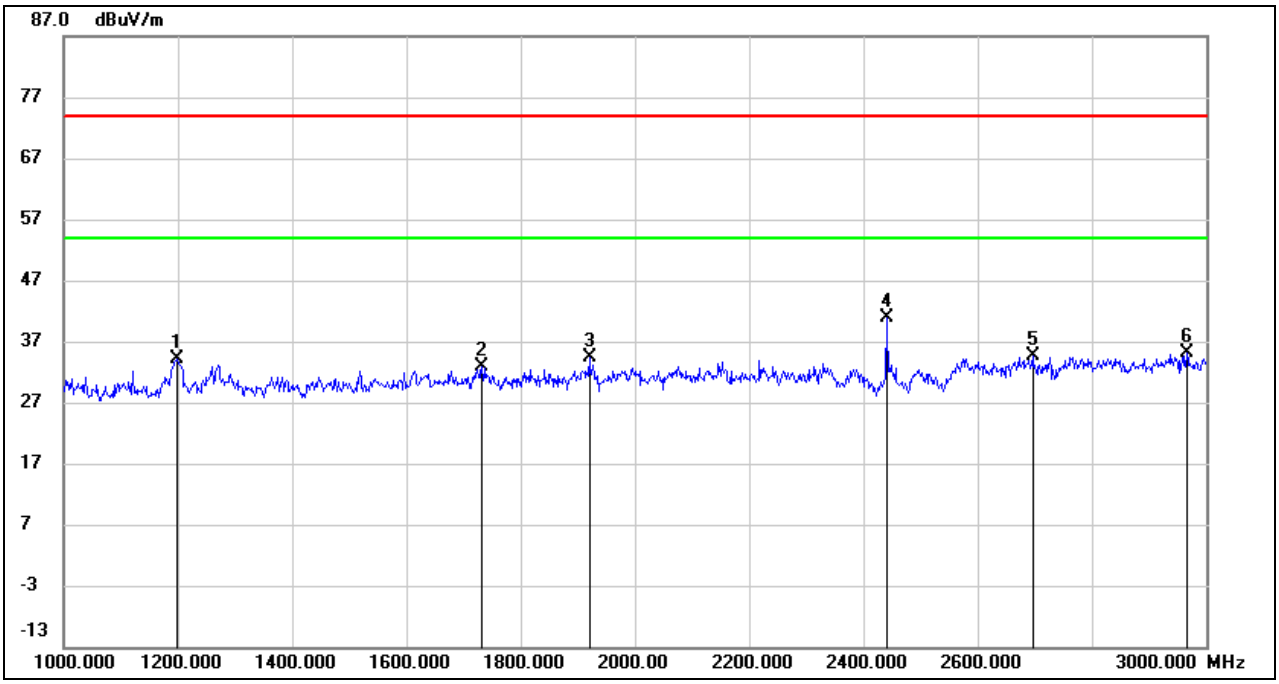
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	48.96	-13.36	35.60	74.00	-38.40	peak
2	1552.000	44.80	-12.73	32.07	74.00	-41.93	peak
3	1920.000	49.93	-11.16	38.77	74.00	-35.23	peak
4	2402.000	44.99	-9.72	35.27	/	/	fundamental
5	2670.000	44.15	-8.51	35.64	74.00	-38.36	peak
6	2818.000	43.28	-7.67	35.61	74.00	-38.39	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

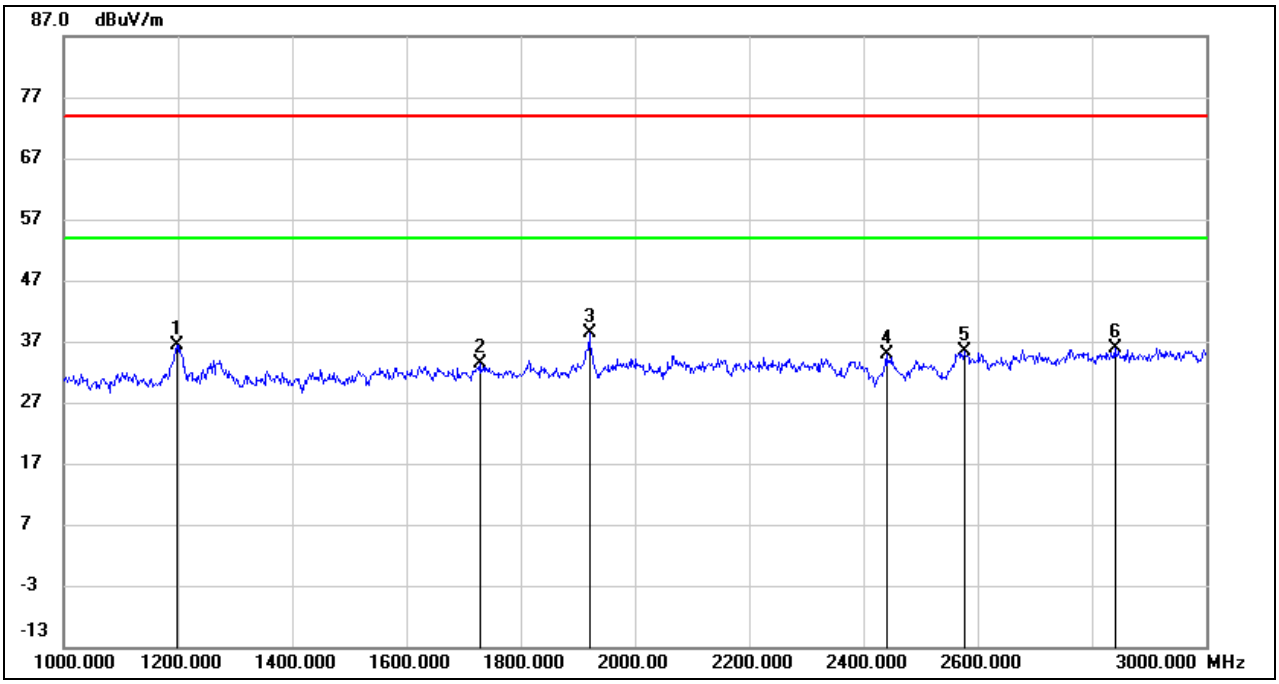
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	47.42	-13.36	34.06	74.00	-39.94	peak
2	1732.000	44.71	-11.84	32.87	74.00	-41.13	peak
3	1920.000	45.61	-11.16	34.45	74.00	-39.55	peak
4	2440.000	50.52	-9.60	40.92	/	/	fundamental
5	2696.000	42.88	-8.35	34.53	74.00	-39.47	peak
6	2966.000	42.00	-6.89	35.11	74.00	-38.89	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

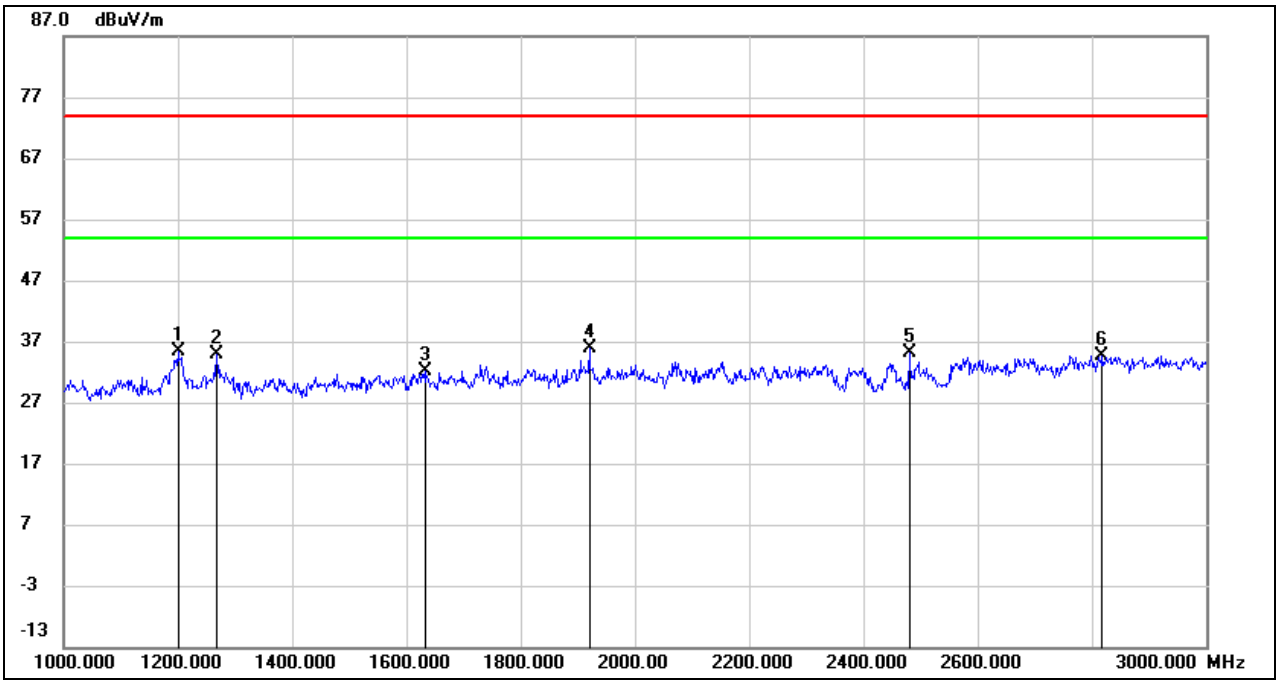
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	49.63	-13.36	36.27	74.00	-37.73	peak
2	1728.000	45.15	-11.85	33.30	74.00	-40.70	peak
3	1920.000	49.55	-11.16	38.39	74.00	-35.61	peak
4	2440.000	44.47	-9.60	34.87	/	/	fundamental
5	2576.000	44.39	-9.02	35.37	74.00	-38.63	peak
6	2840.000	43.40	-7.55	35.85	74.00	-38.15	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

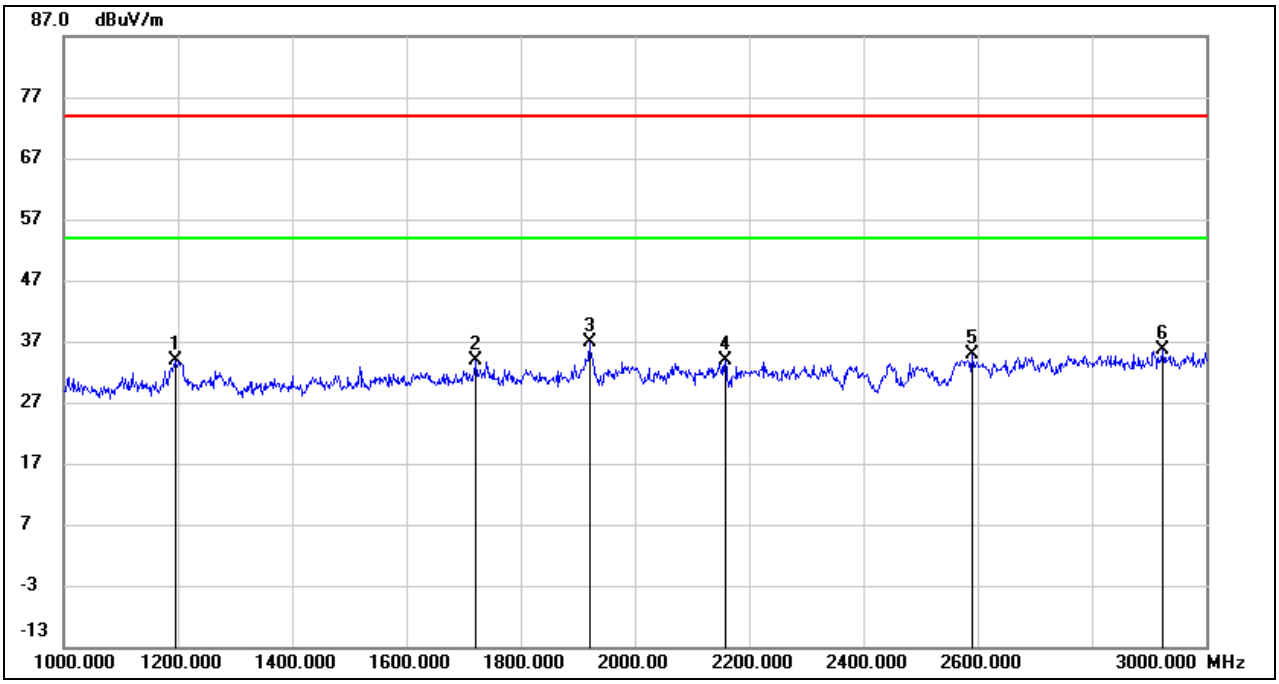
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1200.000	48.81	-13.35	35.46	74.00	-38.54	peak
2	1268.000	47.99	-13.14	34.85	74.00	-39.15	peak
3	1632.000	44.50	-12.31	32.19	74.00	-41.81	peak
4	1920.000	46.99	-11.16	35.83	74.00	-38.17	peak
5	2480.000	44.51	-9.47	35.04	/	/	fundamental
6	2818.000	42.29	-7.67	34.62	74.00	-39.38	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



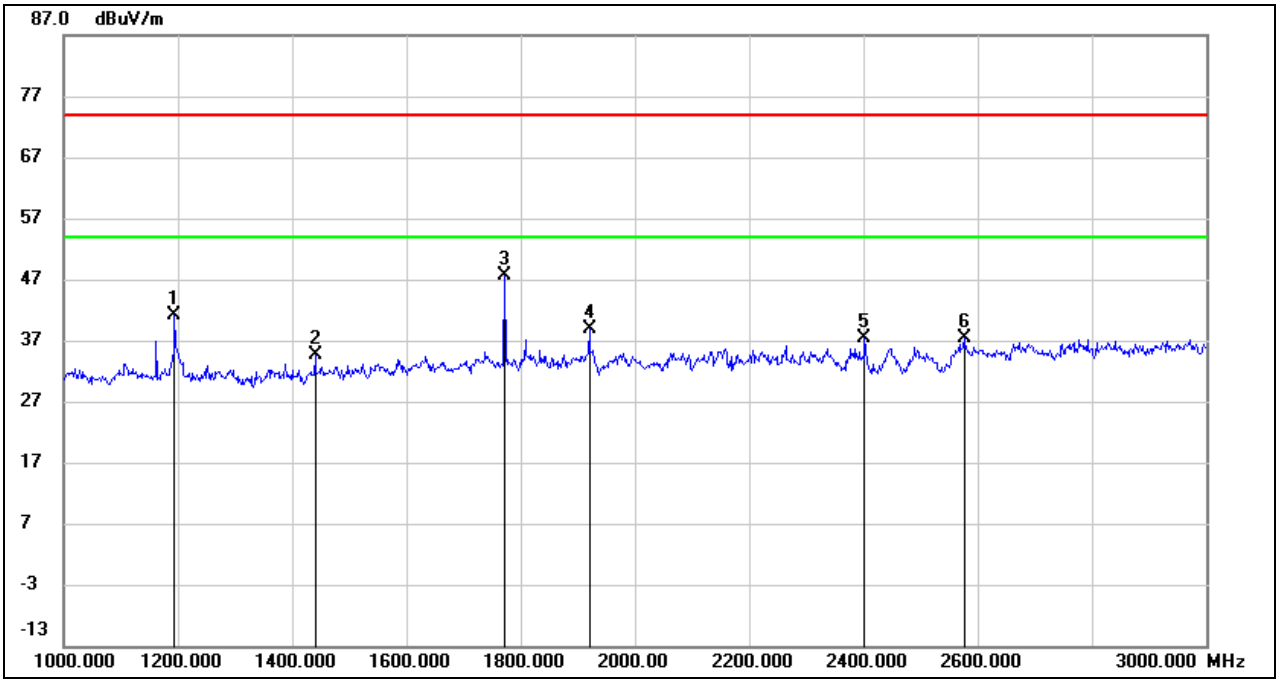
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	47.20	-13.39	33.81	74.00	-40.19	peak
2	1722.000	45.67	-11.89	33.78	74.00	-40.22	peak
3	1920.000	48.10	-11.16	36.94	74.00	-37.06	peak
4	2158.000	44.25	-10.36	33.89	74.00	-40.11	peak
5	2590.000	43.85	-8.94	34.91	74.00	-39.09	peak
6	2924.000	42.69	-7.10	35.59	74.00	-38.41	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All the test modes and antennas have been tested, only the worst data record in the report.

8.2.2. GFSK(2Mbps) MODE

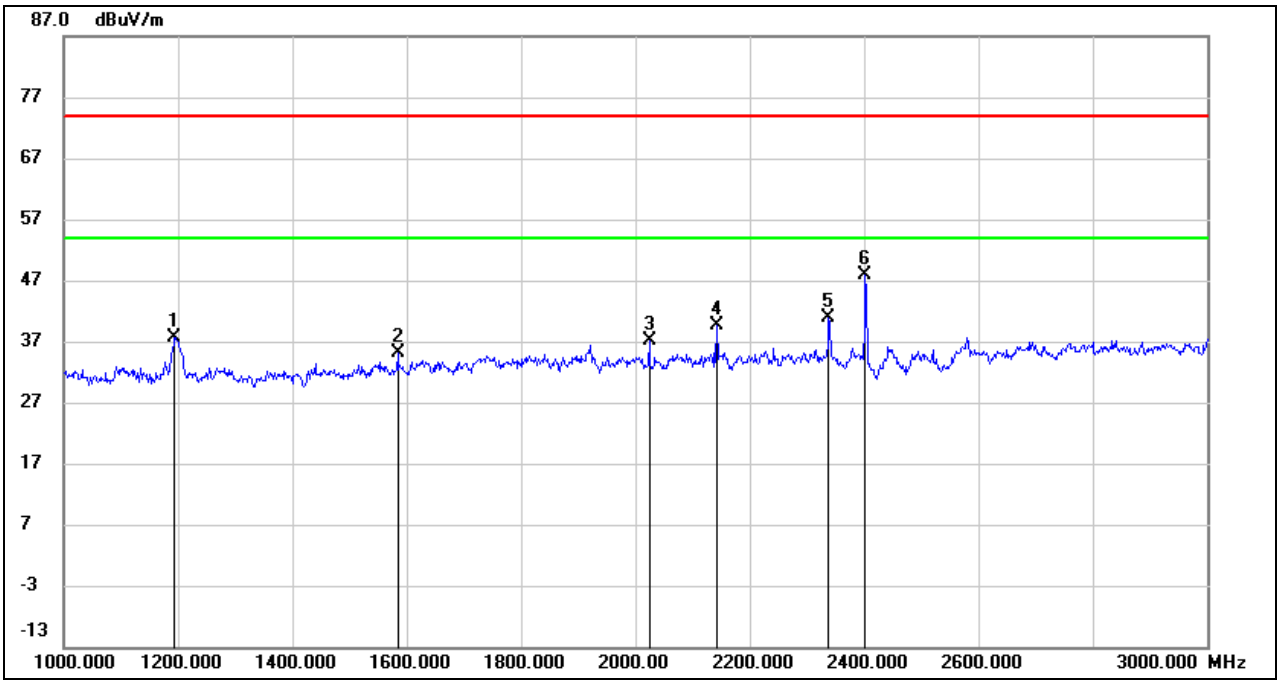
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	54.16	-13.02	41.14	74.00	-32.86	peak
2	1440.000	47.03	-12.51	34.52	74.00	-39.48	peak
3	1772.000	57.82	-10.26	47.56	74.00	-26.44	peak
4	1920.000	49.10	-10.13	38.97	74.00	-35.03	peak
5	2402.000	45.70	-8.39	37.31	/	/	fundamental
6	2576.000	45.42	-7.96	37.46	74.00	-36.54	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

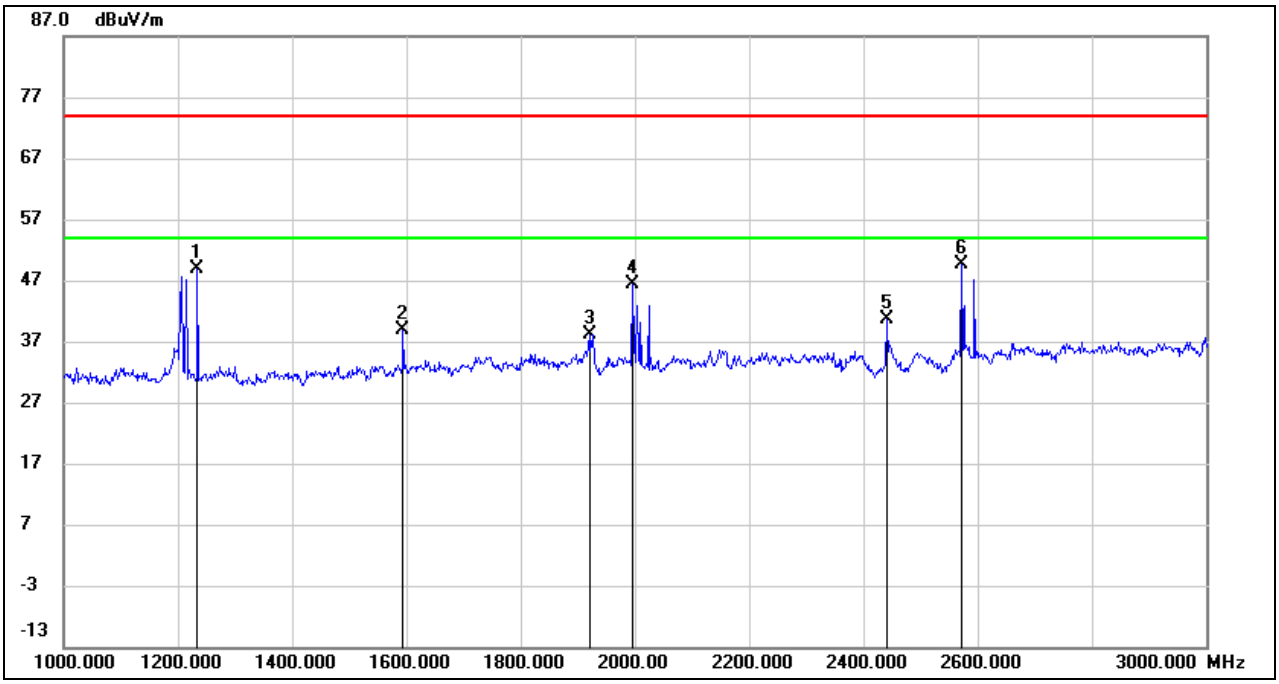
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	50.72	-13.02	37.70	74.00	-36.30	peak
2	1584.000	46.77	-11.66	35.11	74.00	-38.89	peak
3	2024.000	47.17	-10.06	37.11	74.00	-36.89	peak
4	2142.000	48.97	-9.37	39.60	74.00	-34.40	peak
5	2338.000	49.55	-8.60	40.95	74.00	-33.05	peak
6	2402.000	56.35	-8.39	47.96	/	/	fundamental

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

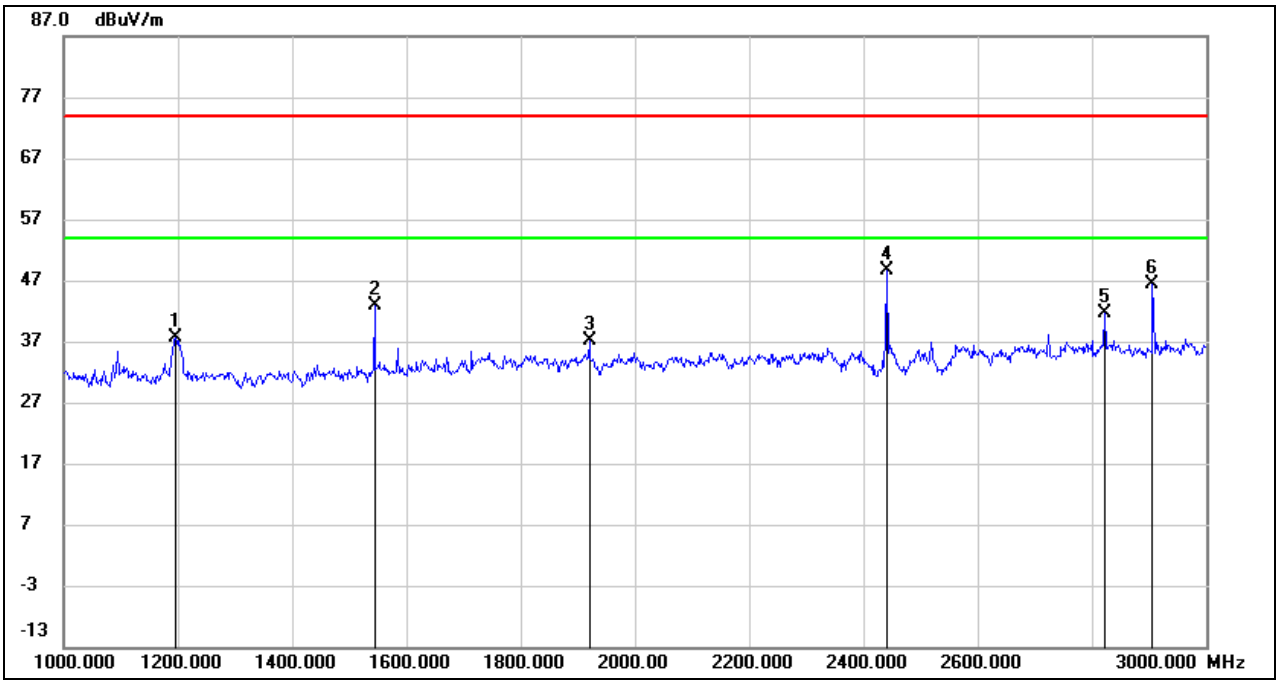
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1234.000	61.75	-12.95	48.80	74.00	-25.20	peak
2	1594.000	50.48	-11.59	38.89	74.00	-35.11	peak
3	1920.000	48.29	-10.13	38.16	74.00	-35.84	peak
4	1996.000	56.68	-10.19	46.49	74.00	-27.51	peak
5	2440.000	49.07	-8.33	40.74	/	/	fundamental
6	2572.000	57.61	-7.96	49.65	74.00	-24.35	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

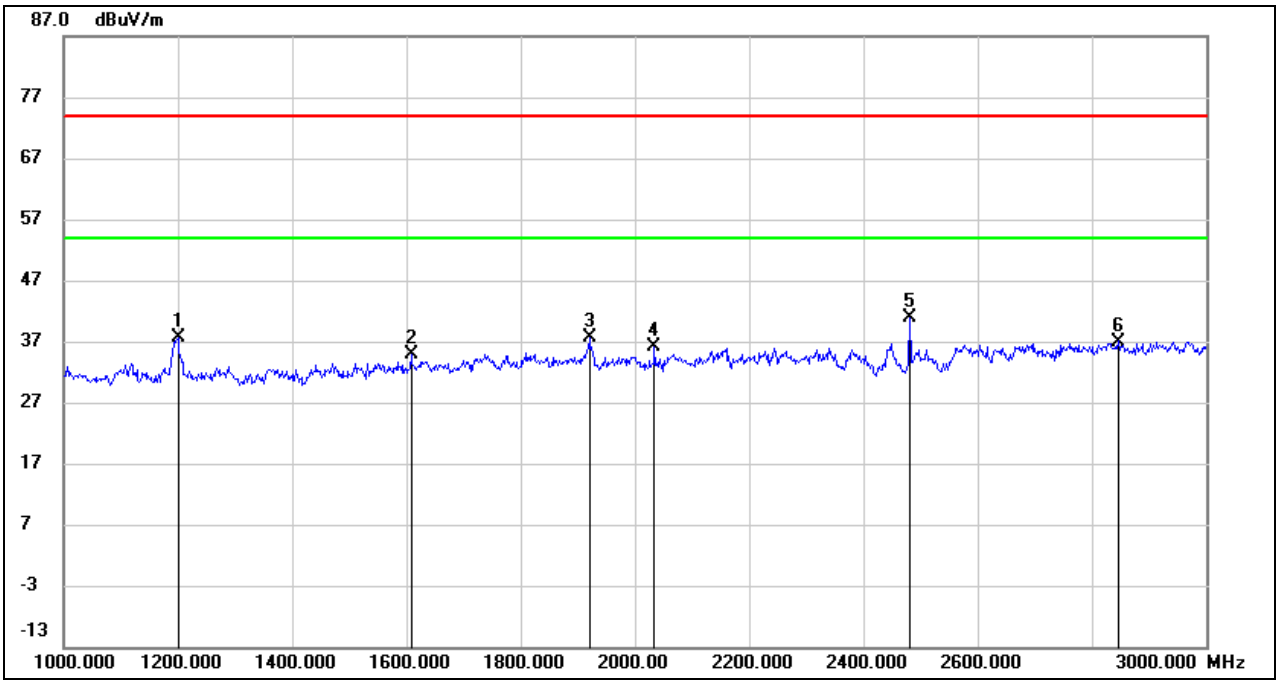
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	50.53	-13.01	37.52	74.00	-36.48	peak
2	1544.000	54.77	-11.93	42.84	74.00	-31.16	peak
3	1920.000	47.17	-10.13	37.04	74.00	-36.96	peak
4	2440.000	56.89	-8.33	48.56	/	/	fundamental
5	2822.000	48.03	-6.44	41.59	74.00	-32.41	peak
6	2906.000	52.39	-6.04	46.35	74.00	-27.65	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

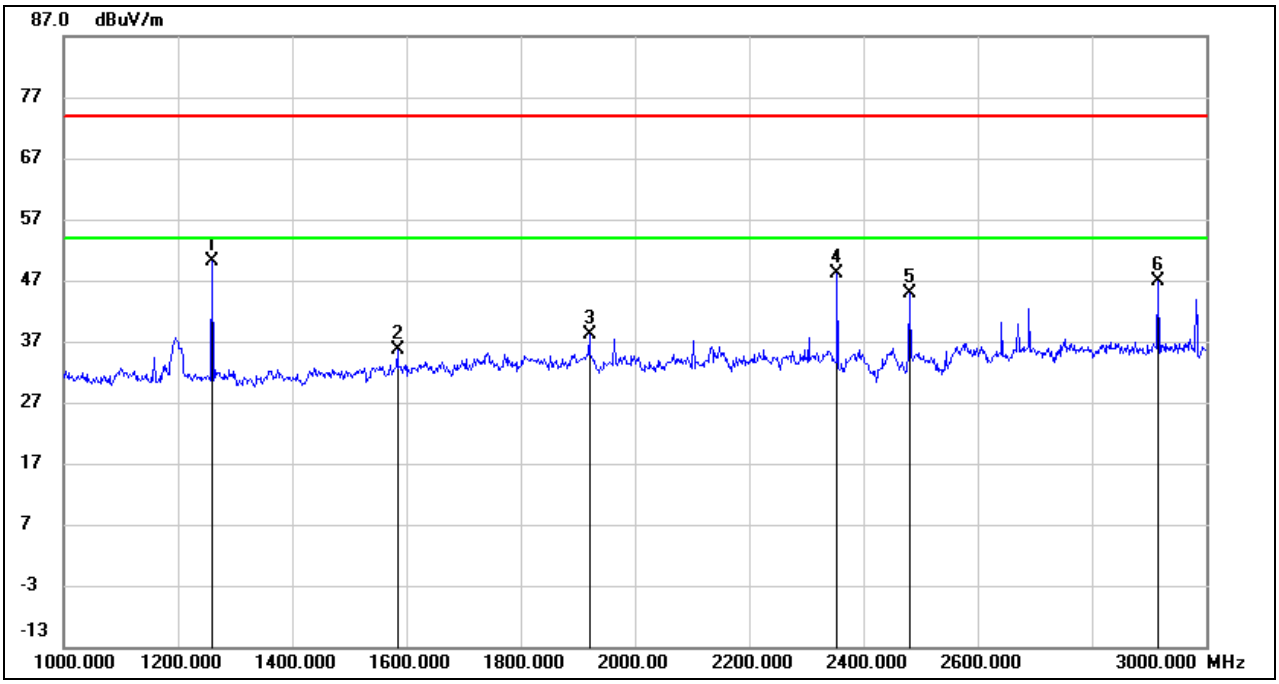
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1200.000	50.67	-12.99	37.68	74.00	-36.32	peak
2	1608.000	46.46	-11.50	34.96	74.00	-39.04	peak
3	1920.000	47.82	-10.13	37.69	74.00	-36.31	peak
4	2034.000	46.01	-10.00	36.01	74.00	-37.99	peak
5	2480.000	49.12	-8.26	40.86	/	/	fundamental
6	2846.000	43.33	-6.33	37.00	74.00	-37.00	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1260.000	62.96	-12.90	50.06	74.00	-23.94	peak
2	1584.000	47.21	-11.66	35.55	74.00	-38.45	peak
3	1920.000	48.30	-10.13	38.17	74.00	-35.83	peak
4	2354.000	56.73	-8.54	48.19	74.00	-25.81	peak
5	2480.000	53.05	-8.26	44.79	/	/	fundamental
6	2916.000	52.88	-5.99	46.89	74.00	-27.11	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

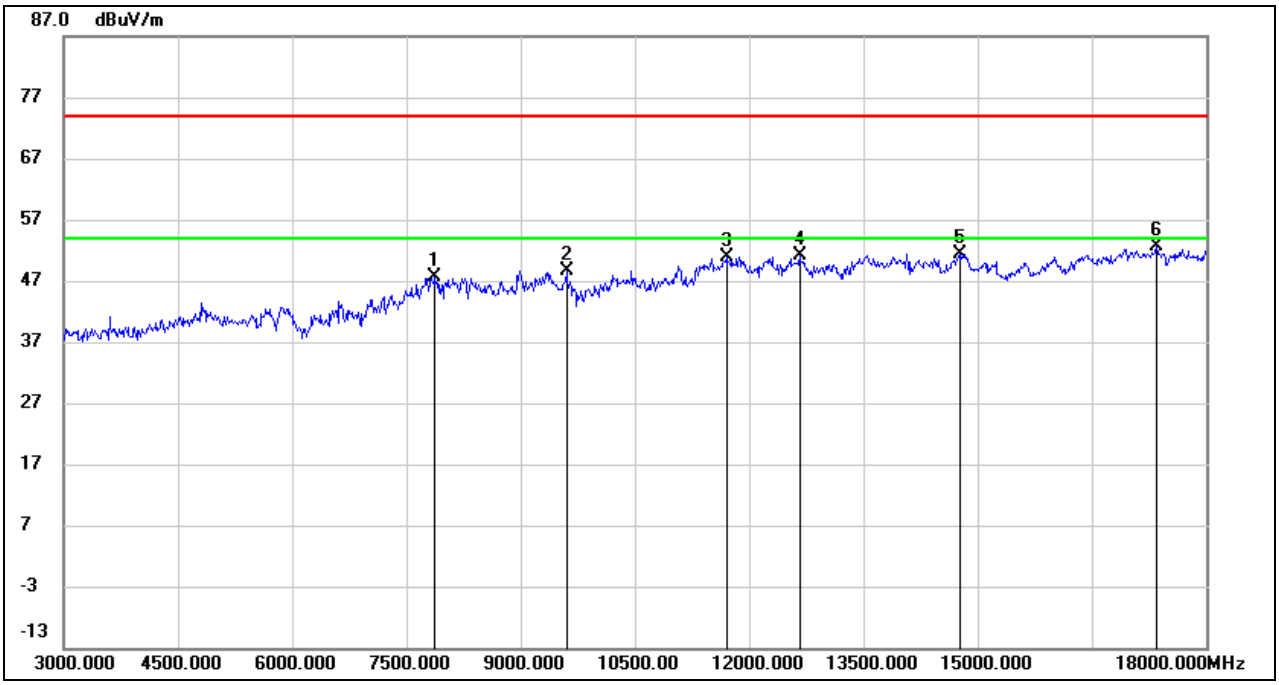
Note: All the test modes and antennas have been tested, only the worst data record in the report.

8.3. SPURIOUS EMISSIONS (3~18GHz)

KTC ANTENNA:

8.3.1. GFSK(1Mbps) MODE

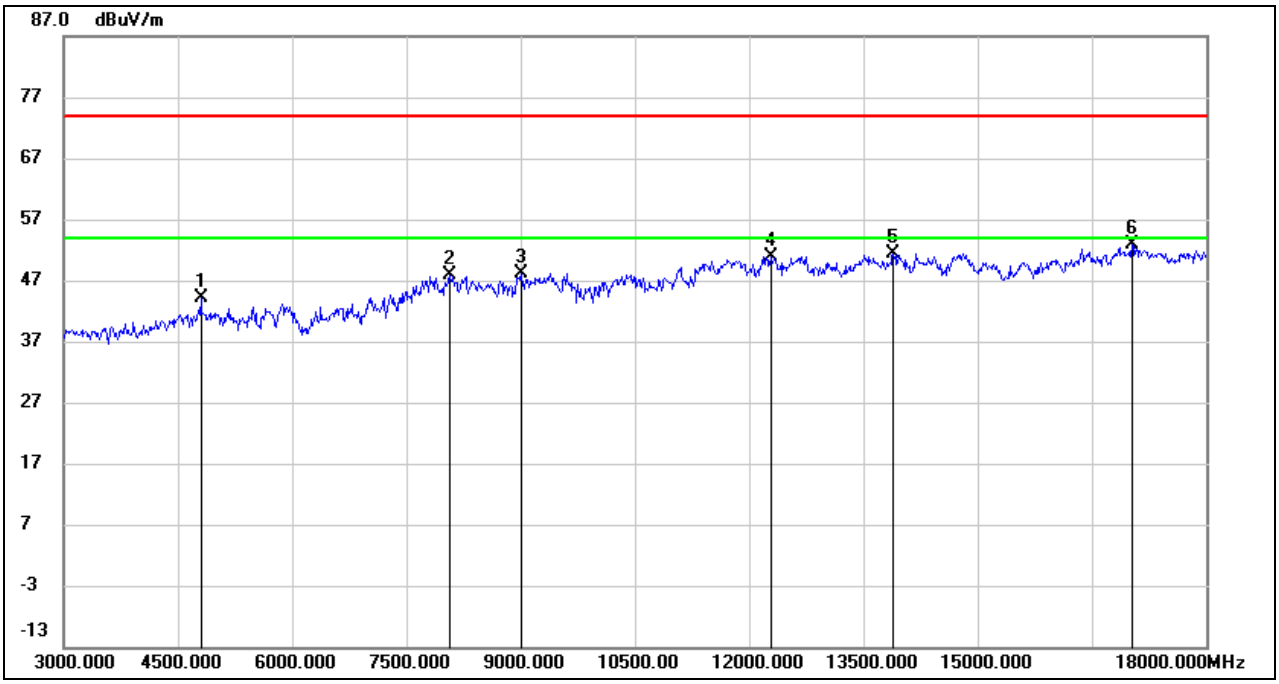
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7875.000	38.63	8.98	47.61	74.00	-26.39	peak
2	9600.000	37.65	11.03	48.68	74.00	-25.32	peak
3	11700.000	35.63	15.35	50.98	74.00	-23.02	peak
4	12660.000	35.40	15.69	51.09	74.00	-22.91	peak
5	14760.000	33.55	17.90	51.45	74.00	-22.55	peak
6	17340.000	30.34	22.31	52.65	74.00	-21.35	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

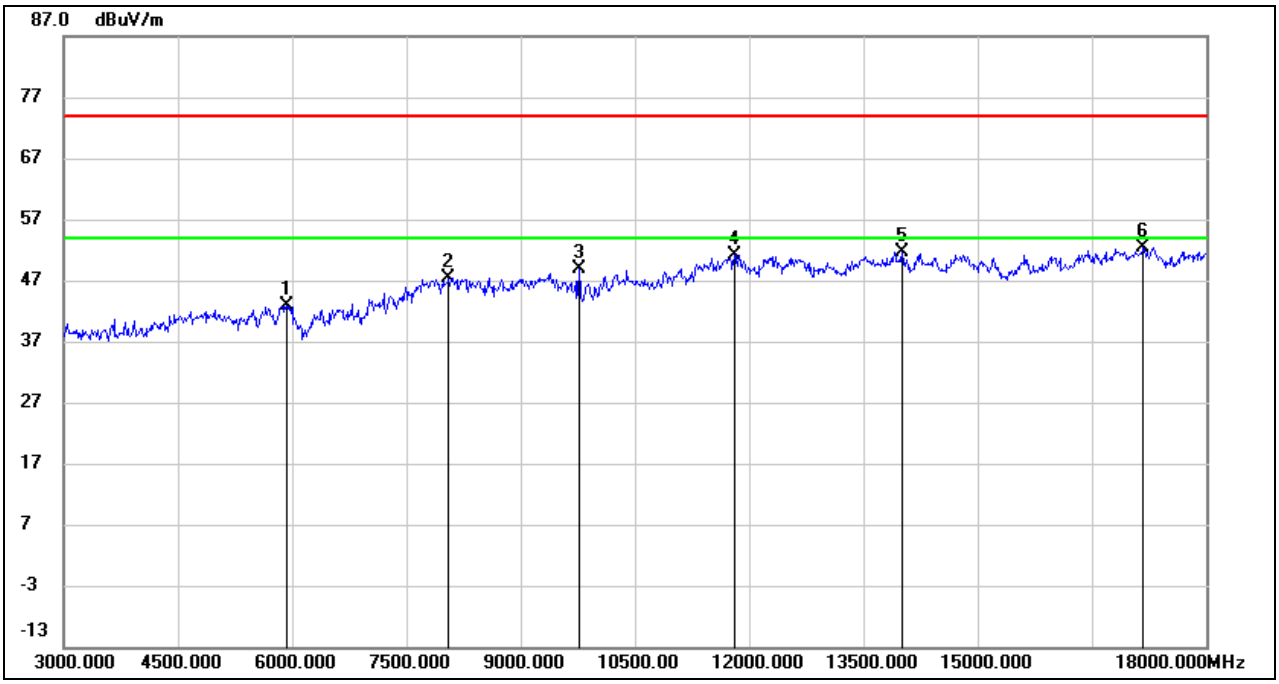
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	42.63	1.40	44.03	74.00	-29.97	peak
2	8070.000	38.26	9.72	47.98	74.00	-26.02	peak
3	9000.000	36.94	11.27	48.21	74.00	-25.79	peak
4	12285.000	34.80	16.08	50.88	74.00	-23.12	peak
5	13890.000	33.91	17.53	51.44	74.00	-22.56	peak
6	17025.000	31.45	21.40	52.85	74.00	-21.15	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

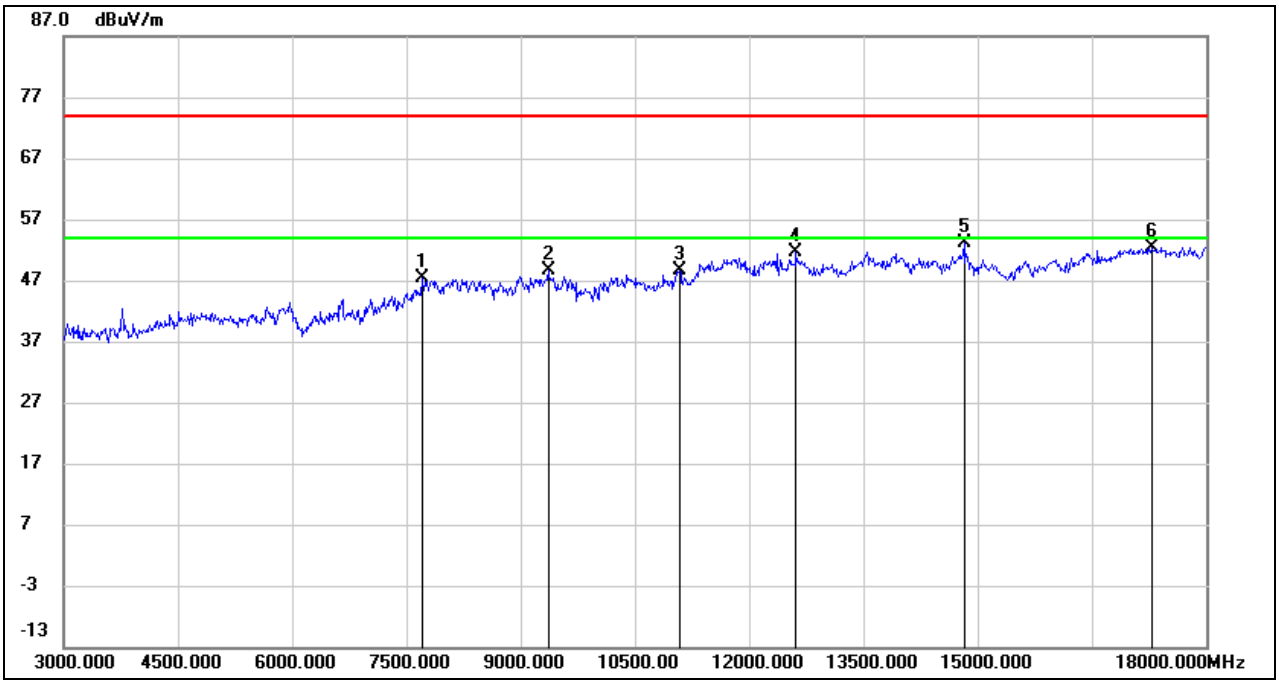
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5925.000	38.38	4.38	42.76	74.00	-31.24	peak
2	8055.000	37.82	9.48	47.30	74.00	-26.70	peak
3	9765.000	38.55	10.22	48.77	74.00	-25.23	peak
4	11805.000	35.79	15.26	51.05	74.00	-22.95	peak
5	14010.000	33.92	17.64	51.56	74.00	-22.44	peak
6	17175.000	30.51	21.97	52.48	74.00	-21.52	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

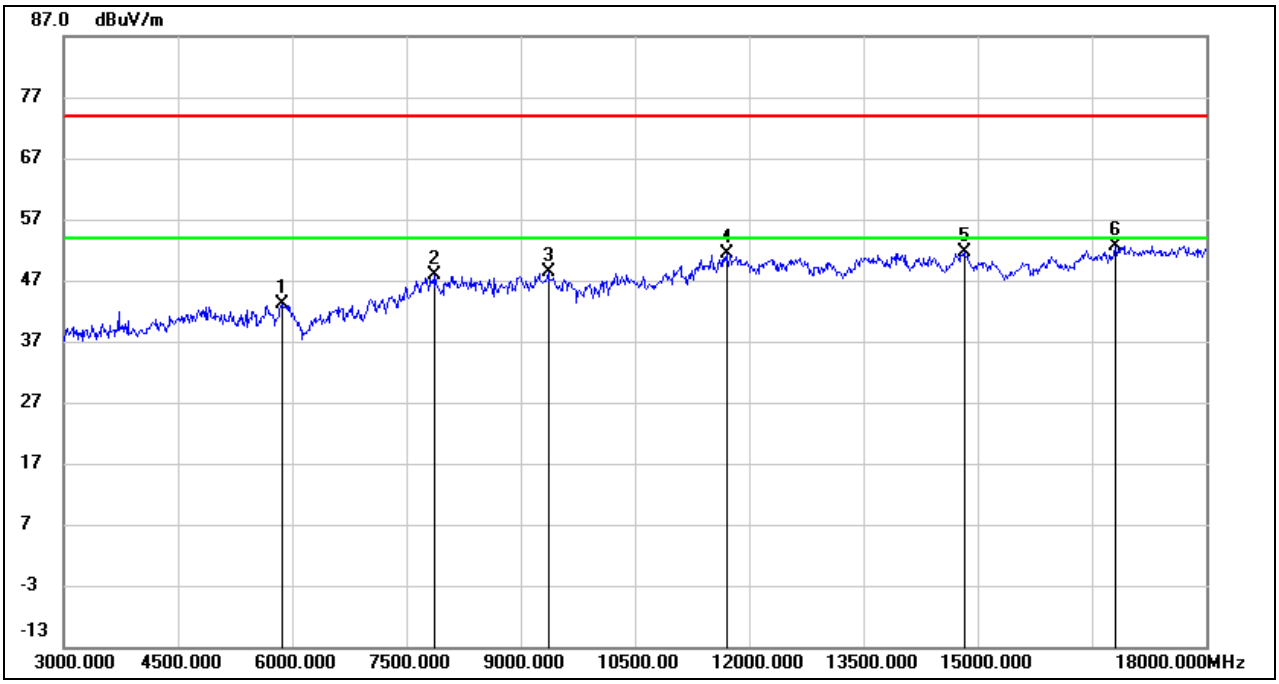
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7710.000	38.91	8.54	47.45	74.00	-26.55	peak
2	9360.000	37.80	10.75	48.55	74.00	-25.45	peak
3	11085.000	34.83	13.72	48.55	74.00	-25.45	peak
4	12615.000	35.81	15.75	51.56	74.00	-22.44	peak
5	14820.000	35.28	17.91	53.19	74.00	-20.81	peak
6	17295.000	29.74	22.58	52.32	74.00	-21.68	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

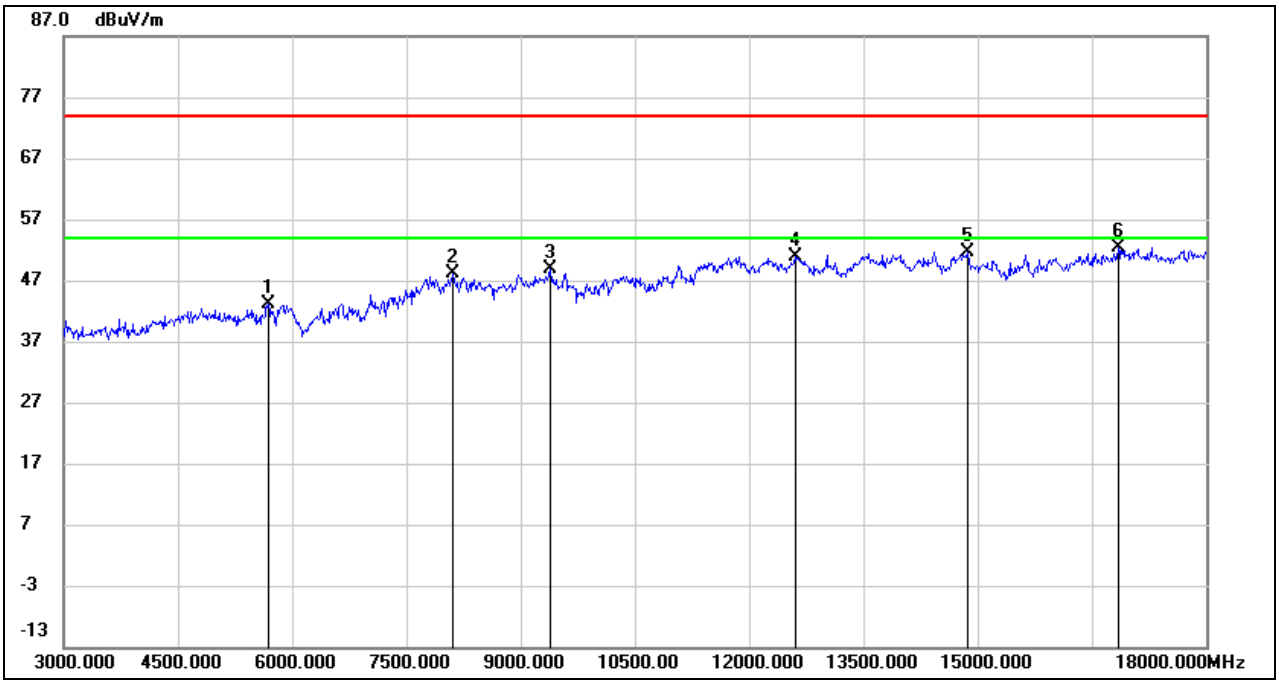
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5865.000	38.85	4.16	43.01	74.00	-30.99	peak
2	7875.000	38.80	8.98	47.78	74.00	-26.22	peak
3	9360.000	37.61	10.75	48.36	74.00	-25.64	peak
4	11700.000	36.11	15.35	51.46	74.00	-22.54	peak
5	14820.000	33.82	17.91	51.73	74.00	-22.27	peak
6	16815.000	31.86	20.84	52.70	74.00	-21.30	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

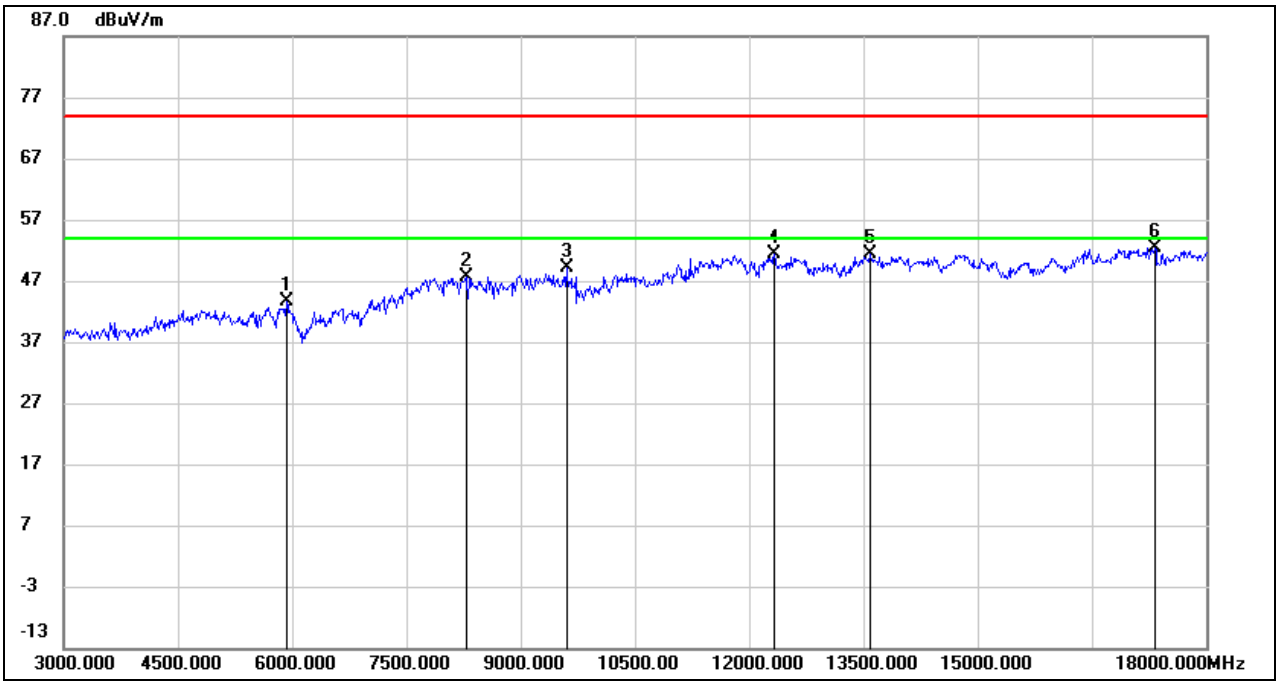


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5685.000	40.00	3.07	43.07	74.00	-30.93	peak
2	8115.000	38.01	10.13	48.14	74.00	-25.86	peak
3	9390.000	37.88	10.92	48.80	74.00	-25.20	peak
4	12600.000	35.09	15.78	50.87	74.00	-23.13	peak
5	14865.000	33.94	17.61	51.55	74.00	-22.45	peak
6	16845.000	31.24	21.10	52.34	74.00	-21.66	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8.3.2. GFSK(2Mbps) MODE

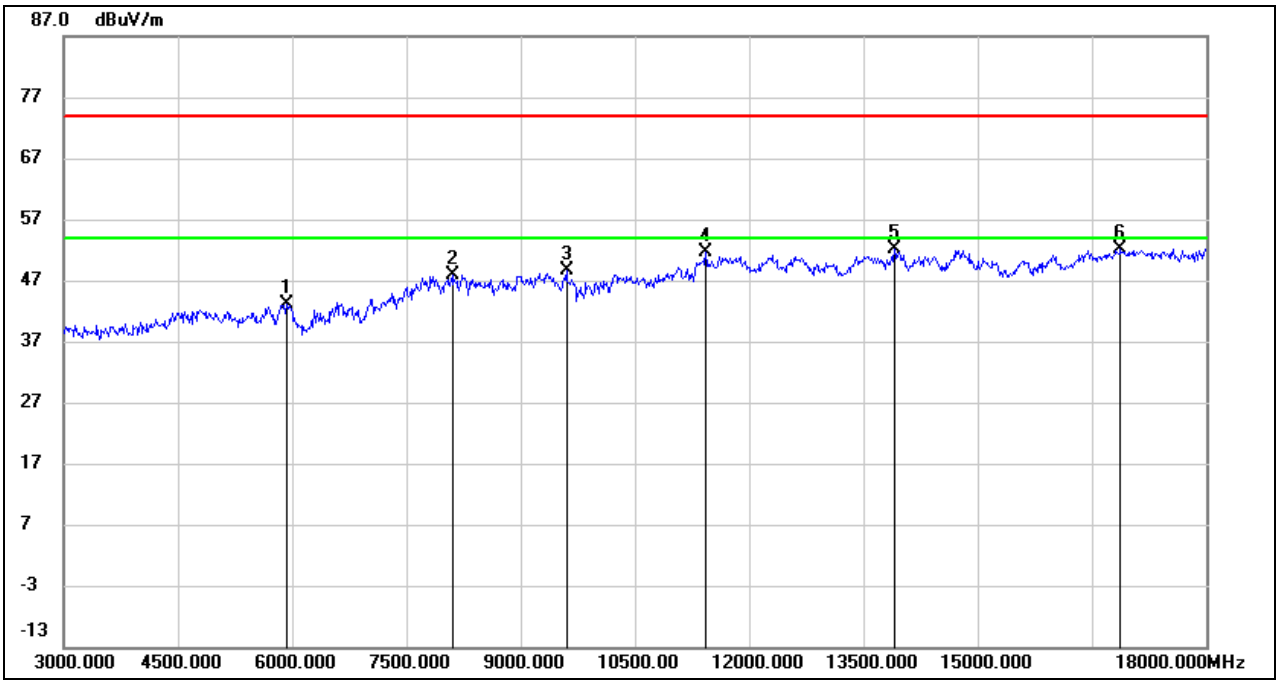
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5925.000	39.27	4.38	43.65	74.00	-30.35	peak
2	8280.000	37.96	9.71	47.67	74.00	-26.33	peak
3	9600.000	38.17	11.03	49.20	74.00	-24.80	peak
4	12330.000	35.30	16.05	51.35	74.00	-22.65	peak
5	13590.000	34.19	17.11	51.30	74.00	-22.70	peak
6	17325.000	30.00	22.42	52.42	74.00	-21.58	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

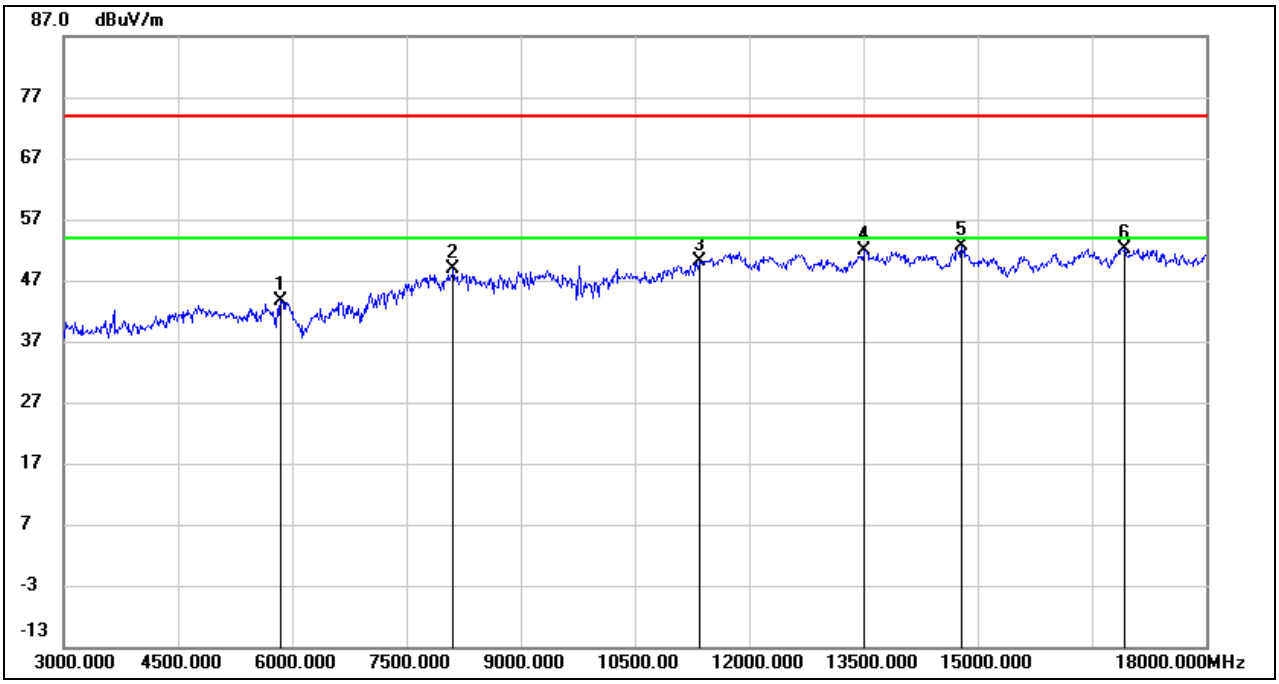
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5925.000	38.76	4.38	43.14	74.00	-30.86	peak
2	8115.000	37.75	10.13	47.88	74.00	-26.12	peak
3	9600.000	37.52	11.03	48.55	74.00	-25.45	peak
4	11430.000	37.00	14.72	51.72	74.00	-22.28	peak
5	13905.000	34.63	17.54	52.17	74.00	-21.83	peak
6	16875.000	30.85	21.35	52.20	74.00	-21.80	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

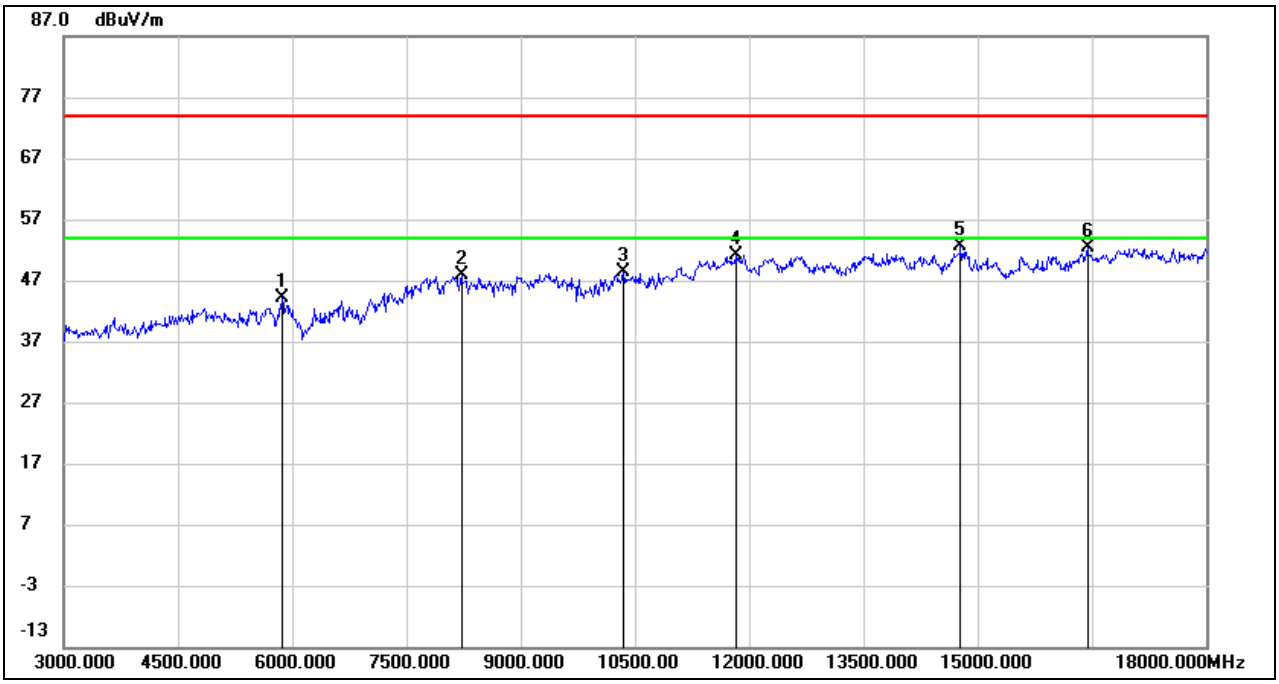
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5850.000	39.63	4.00	43.63	74.00	-30.37	peak
2	8115.000	38.86	10.13	48.99	74.00	-25.01	peak
3	11340.000	35.89	14.21	50.10	74.00	-23.90	peak
4	13515.000	34.80	17.19	51.99	74.00	-22.01	peak
5	14790.000	34.68	18.01	52.69	74.00	-21.31	peak
6	16935.000	30.64	21.45	52.09	74.00	-21.91	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

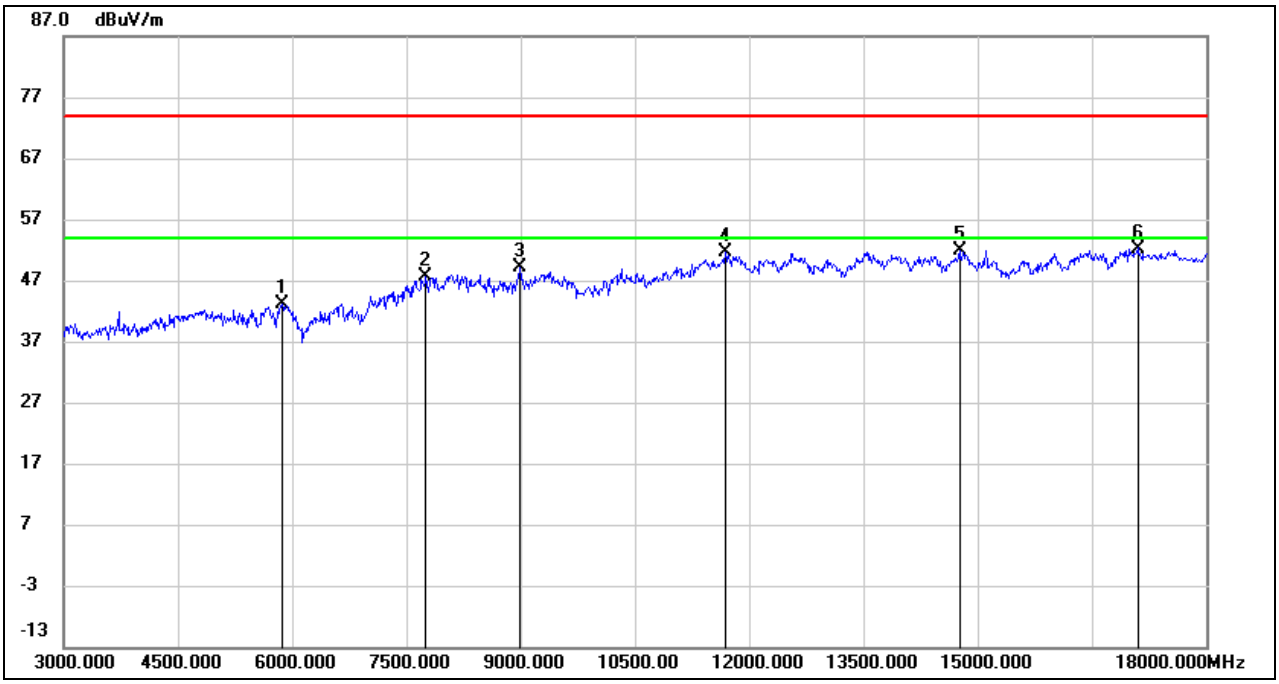
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5865.000	39.85	4.16	44.01	74.00	-29.99	peak
2	8220.000	38.01	9.79	47.80	74.00	-26.20	peak
3	10350.000	36.39	12.02	48.41	74.00	-25.59	peak
4	11820.000	35.84	15.29	51.13	74.00	-22.87	peak
5	14775.000	34.79	17.95	52.74	74.00	-21.26	peak
6	16440.000	32.69	19.68	52.37	74.00	-21.63	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit duration, please refer to clause 7.1.
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

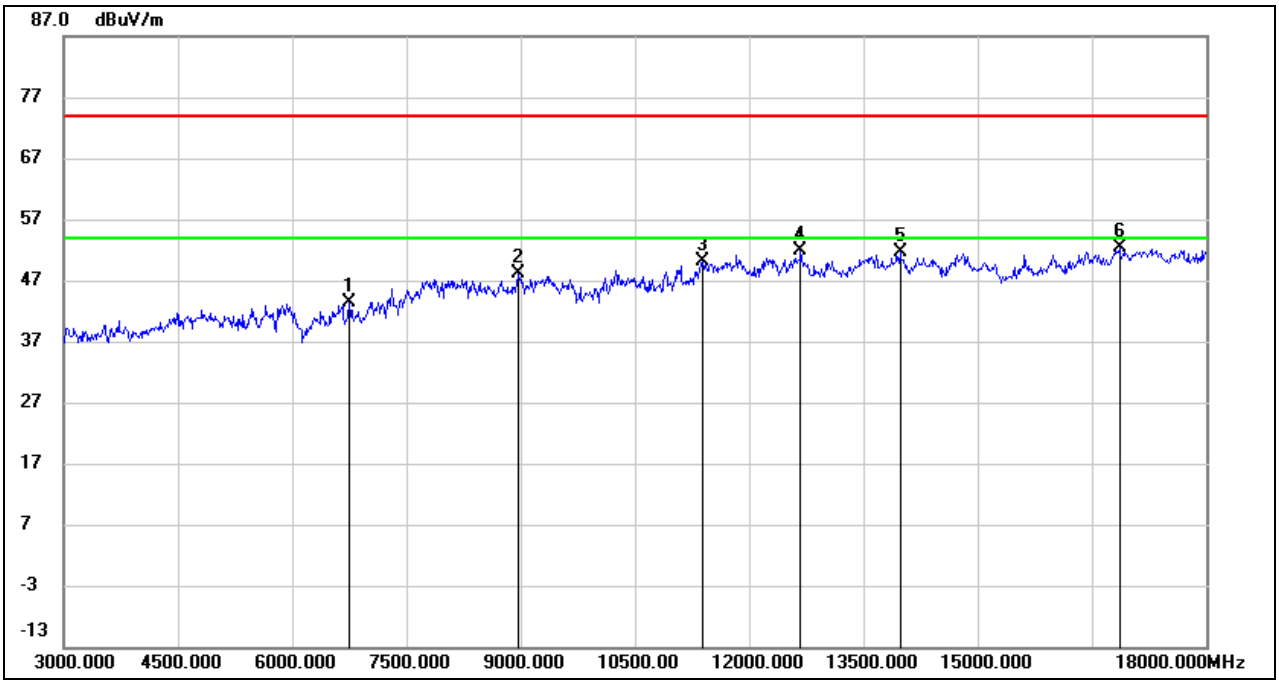
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5865.000	39.05	4.16	43.21	74.00	-30.79	peak
2	7755.000	38.74	8.94	47.68	74.00	-26.32	peak
3	8985.000	38.10	10.99	49.09	74.00	-24.91	peak
4	11685.000	36.25	15.26	51.51	74.00	-22.49	peak
5	14760.000	33.91	17.90	51.81	74.00	-22.19	peak
6	17100.000	30.35	21.90	52.25	74.00	-21.75	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6750.000	37.45	5.95	43.40	74.00	-30.60	peak
2	8970.000	37.42	10.70	48.12	74.00	-25.88	peak
3	11385.000	35.40	14.62	50.02	74.00	-23.98	peak
4	12675.000	36.21	15.66	51.87	74.00	-22.13	peak
5	13980.000	34.10	17.64	51.74	74.00	-22.26	peak
6	16860.000	31.05	21.22	52.27	74.00	-21.73	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

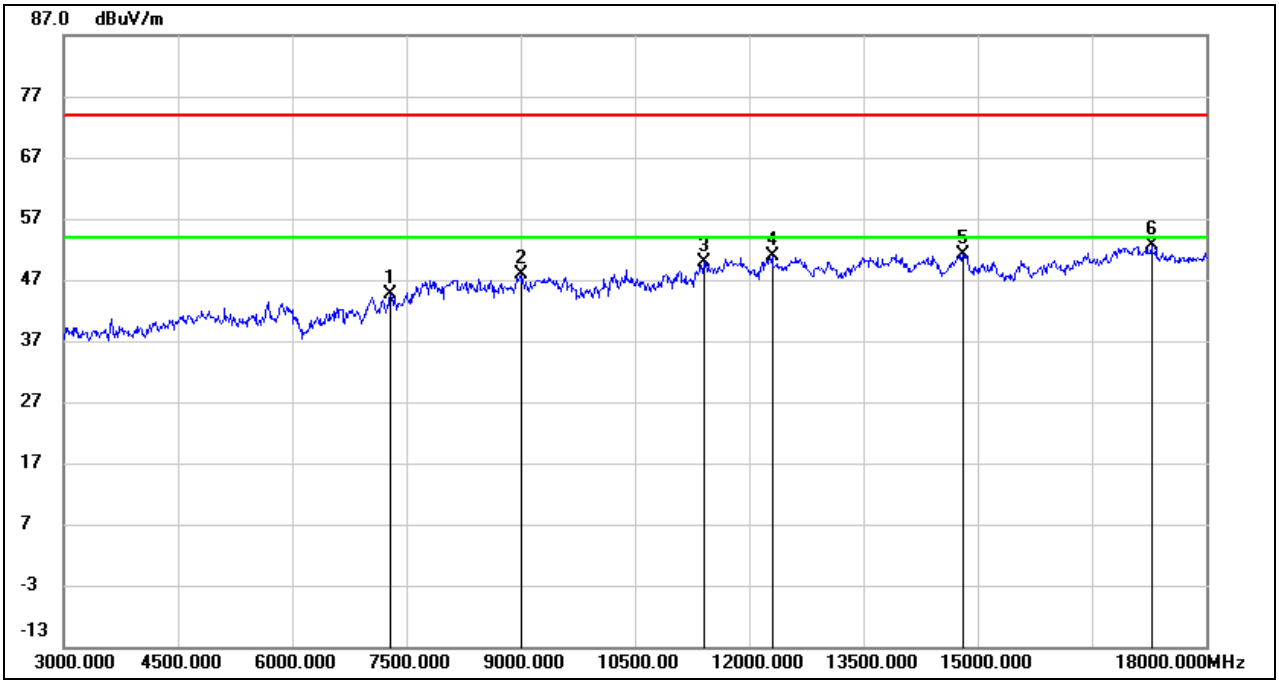
5. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected High Pass Filter losses.

6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

INNO-LINK ANTENNA:

8.3.3. GFSK(1Mbps) MODE

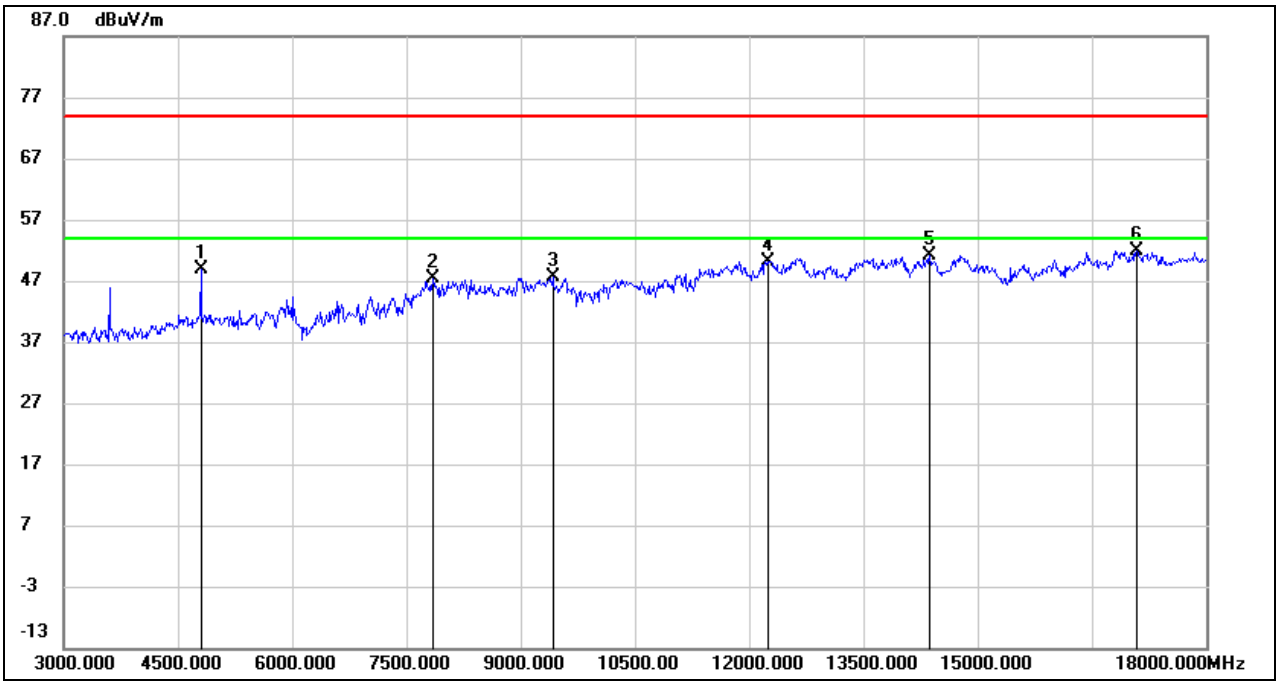
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	7290.000	37.48	7.12	44.60	74.00	-29.40	peak
2	9000.000	36.59	11.27	47.86	74.00	-26.14	peak
3	11400.000	35.09	14.76	49.85	74.00	-24.15	peak
4	12300.000	34.79	16.09	50.88	74.00	-23.12	peak
5	14805.000	33.21	18.00	51.21	74.00	-22.79	peak
6	17280.000	30.05	22.48	52.53	74.00	-21.47	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

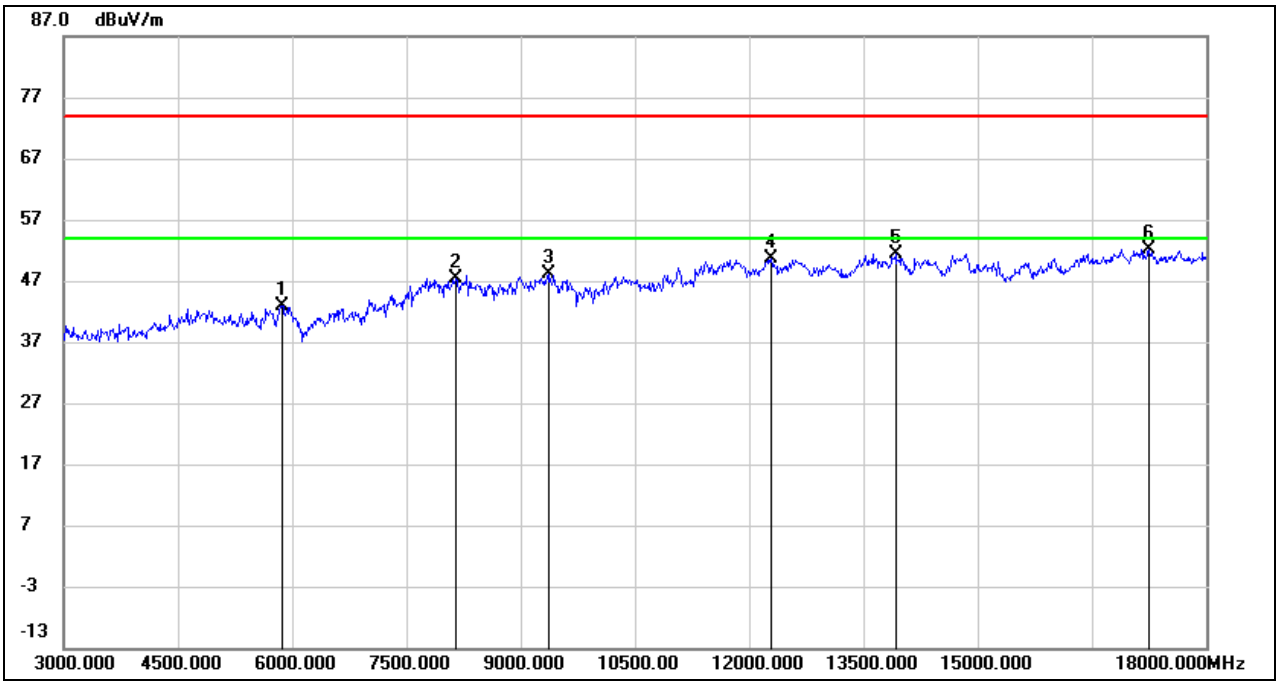
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	47.50	1.40	48.90	74.00	-25.10	peak
2	7845.000	38.19	9.14	47.33	74.00	-26.67	peak
3	9420.000	36.78	10.88	47.66	74.00	-26.34	peak
4	12240.000	34.20	16.01	50.21	74.00	-23.79	peak
5	14370.000	33.56	17.61	51.17	74.00	-22.83	peak
6	17085.000	30.14	21.80	51.94	74.00	-22.06	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

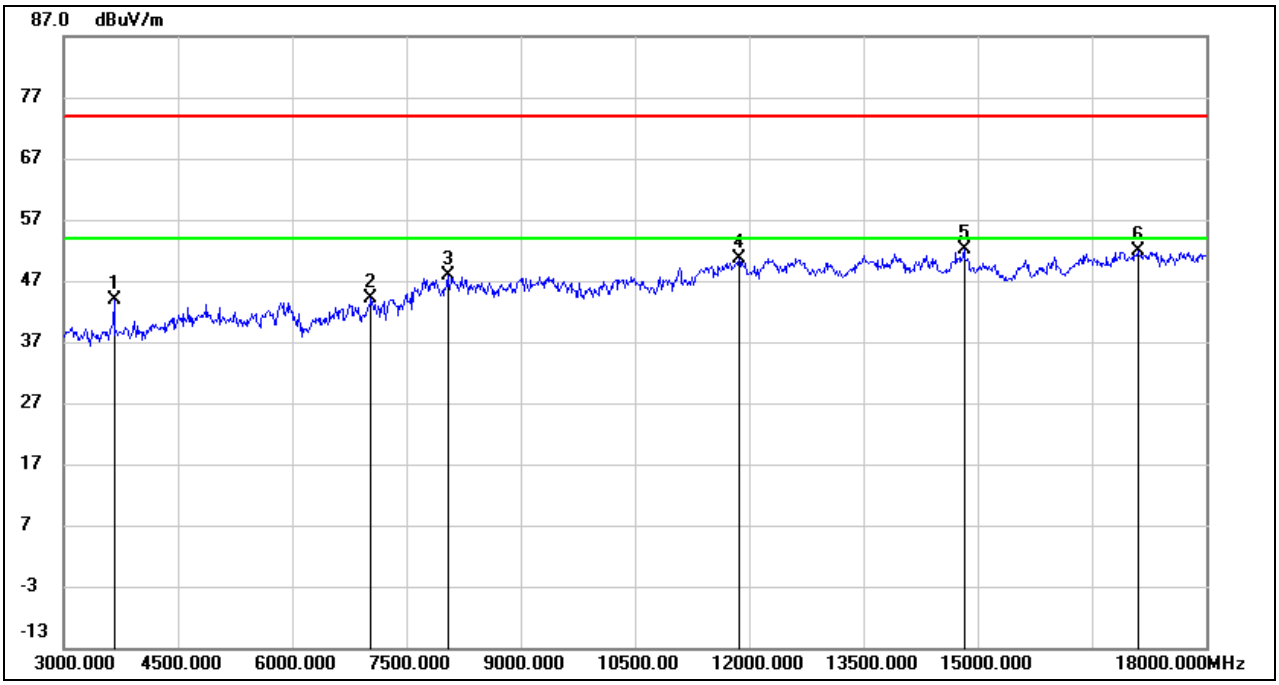
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5865.000	38.75	4.16	42.91	74.00	-31.09	peak
2	8145.000	37.43	10.01	47.44	74.00	-26.56	peak
3	9375.000	37.34	10.83	48.17	74.00	-25.83	peak
4	12285.000	34.44	16.08	50.52	74.00	-23.48	peak
5	13920.000	33.90	17.55	51.45	74.00	-22.55	peak
6	17250.000	29.91	22.30	52.21	74.00	-21.79	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

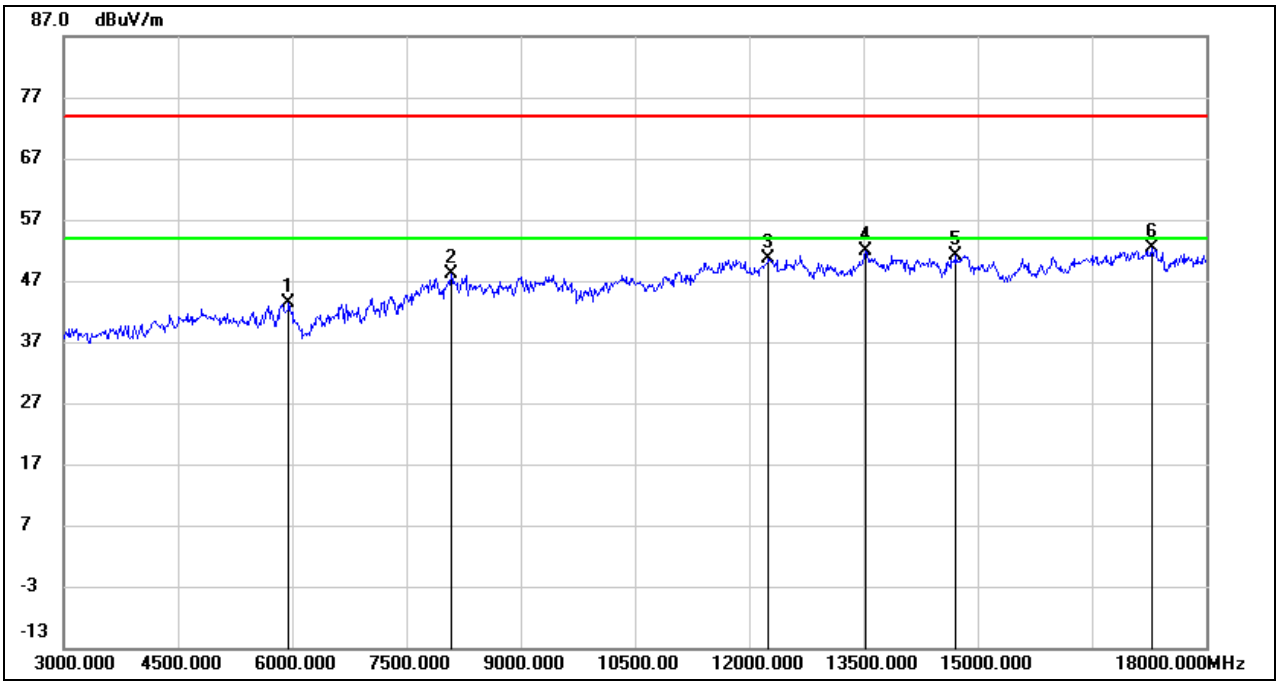
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3660.000	46.85	-3.02	43.83	74.00	-30.17	peak
2	7035.000	36.49	7.62	44.11	74.00	-29.89	peak
3	8040.000	38.73	9.25	47.98	74.00	-26.02	peak
4	11865.000	35.29	15.42	50.71	74.00	-23.29	peak
5	14820.000	34.21	17.91	52.12	74.00	-21.88	peak
6	17100.000	29.88	21.90	51.78	74.00	-22.22	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

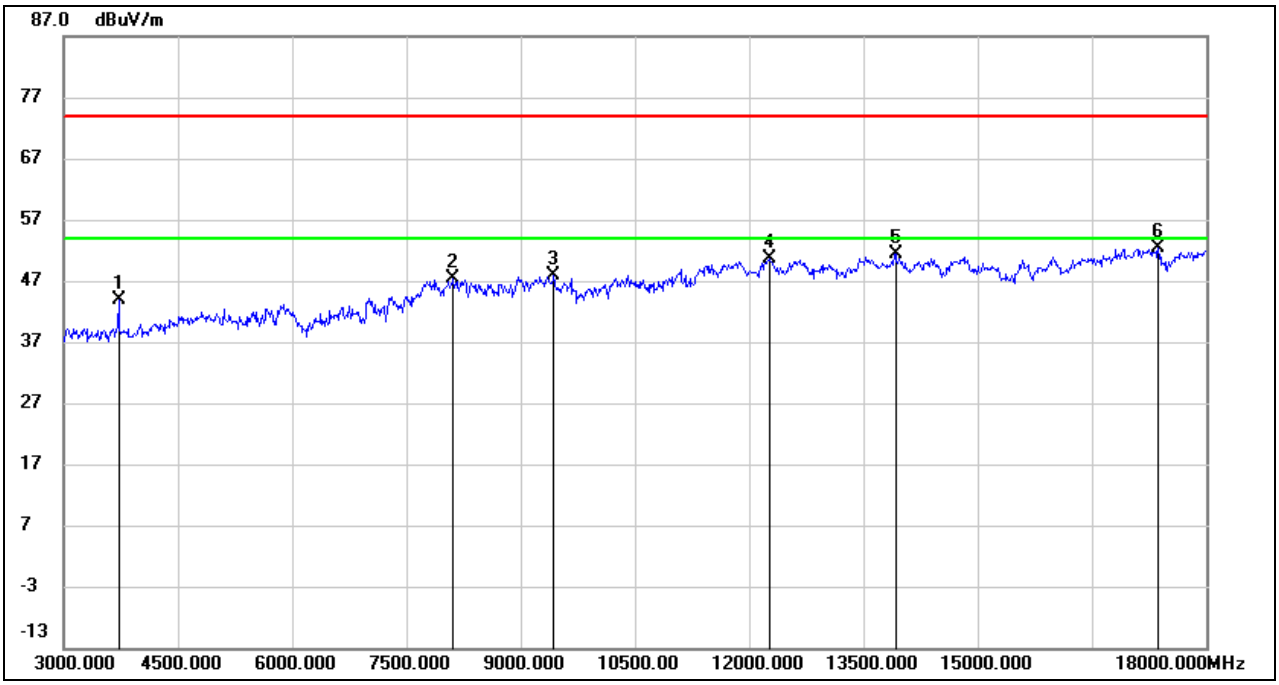
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5955.000	39.04	4.24	43.28	74.00	-30.72	peak
2	8085.000	38.23	9.94	48.17	74.00	-25.83	peak
3	12255.000	34.68	16.03	50.71	74.00	-23.29	peak
4	13530.000	34.69	17.19	51.88	74.00	-22.12	peak
5	14715.000	33.46	17.74	51.20	74.00	-22.80	peak
6	17280.000	29.95	22.48	52.43	74.00	-21.57	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

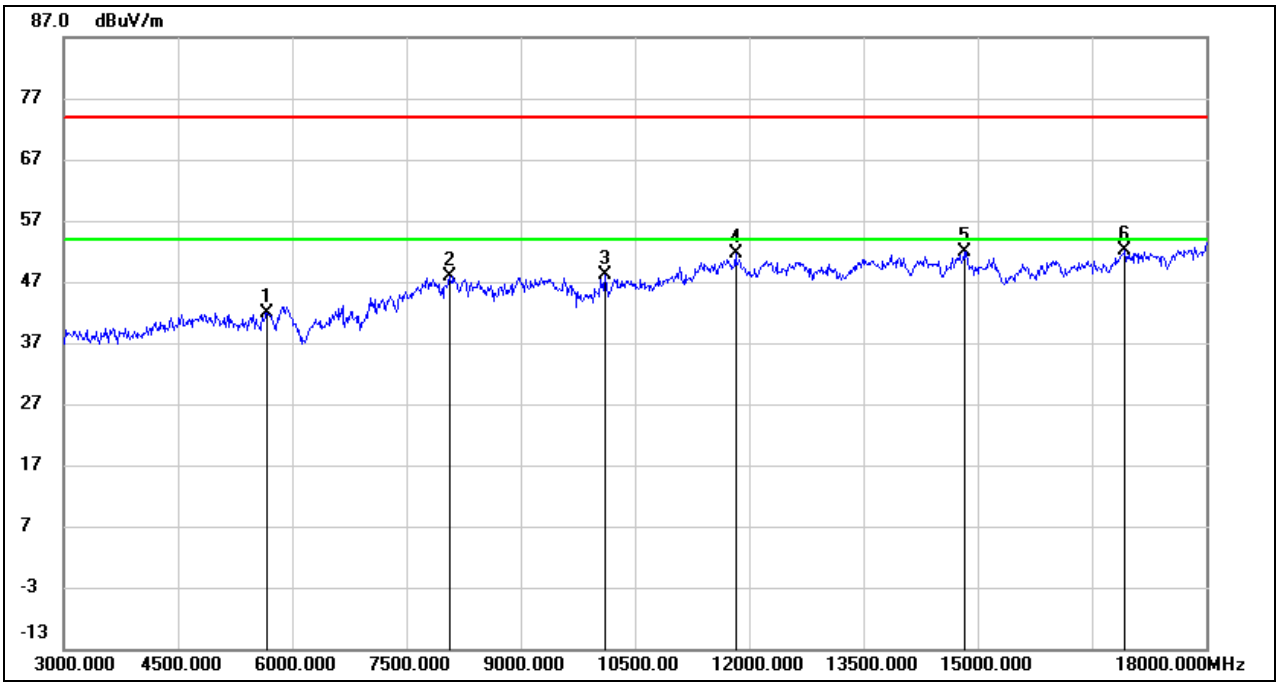


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	46.77	-2.84	43.93	74.00	-30.07	peak
2	8115.000	37.24	10.13	47.37	74.00	-26.63	peak
3	9435.000	37.18	10.81	47.99	74.00	-26.01	peak
4	12270.000	34.55	16.04	50.59	74.00	-23.41	peak
5	13920.000	33.94	17.55	51.49	74.00	-22.51	peak
6	17370.000	30.31	22.10	52.41	74.00	-21.59	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8.3.4. GFSK(2Mbps) MODE

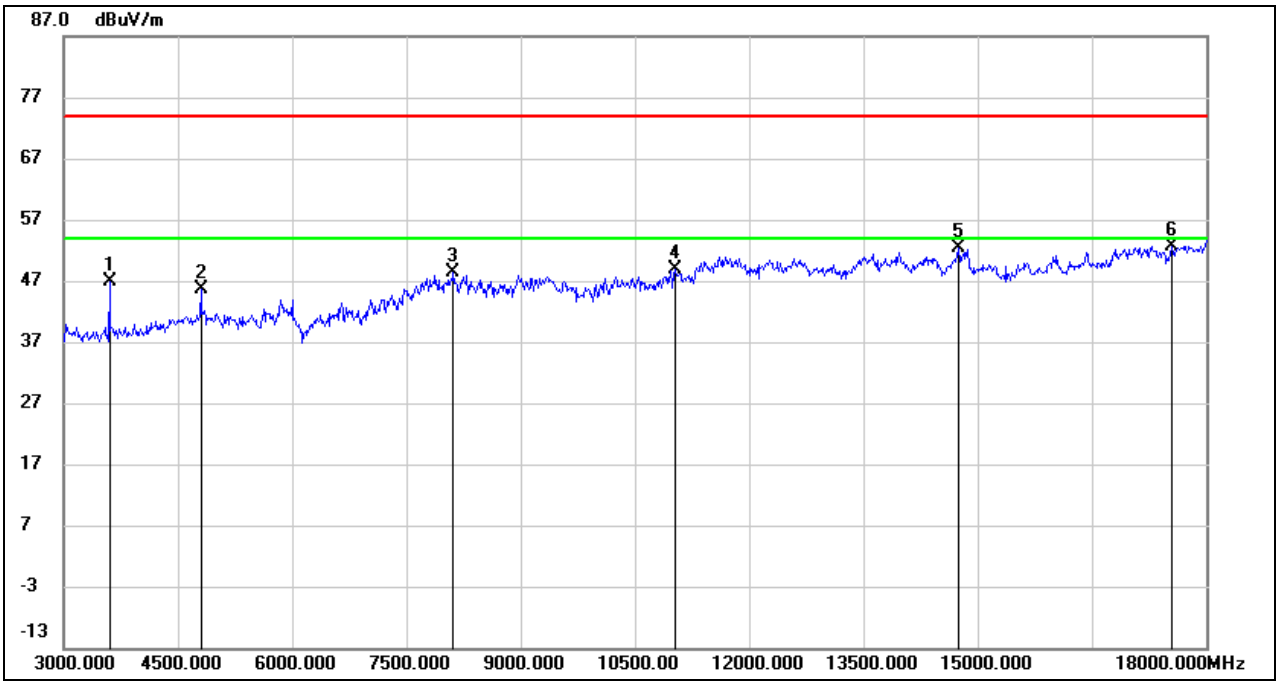
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5670.000	38.88	3.06	41.94	74.00	-32.06	peak
2	8070.000	38.18	9.72	47.90	74.00	-26.10	peak
3	10110.000	36.93	11.14	48.07	74.00	-25.93	peak
4	11820.000	36.24	15.29	51.53	74.00	-22.47	peak
5	14820.000	34.07	17.91	51.98	74.00	-22.02	peak
6	16935.000	30.57	21.45	52.02	74.00	-21.98	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

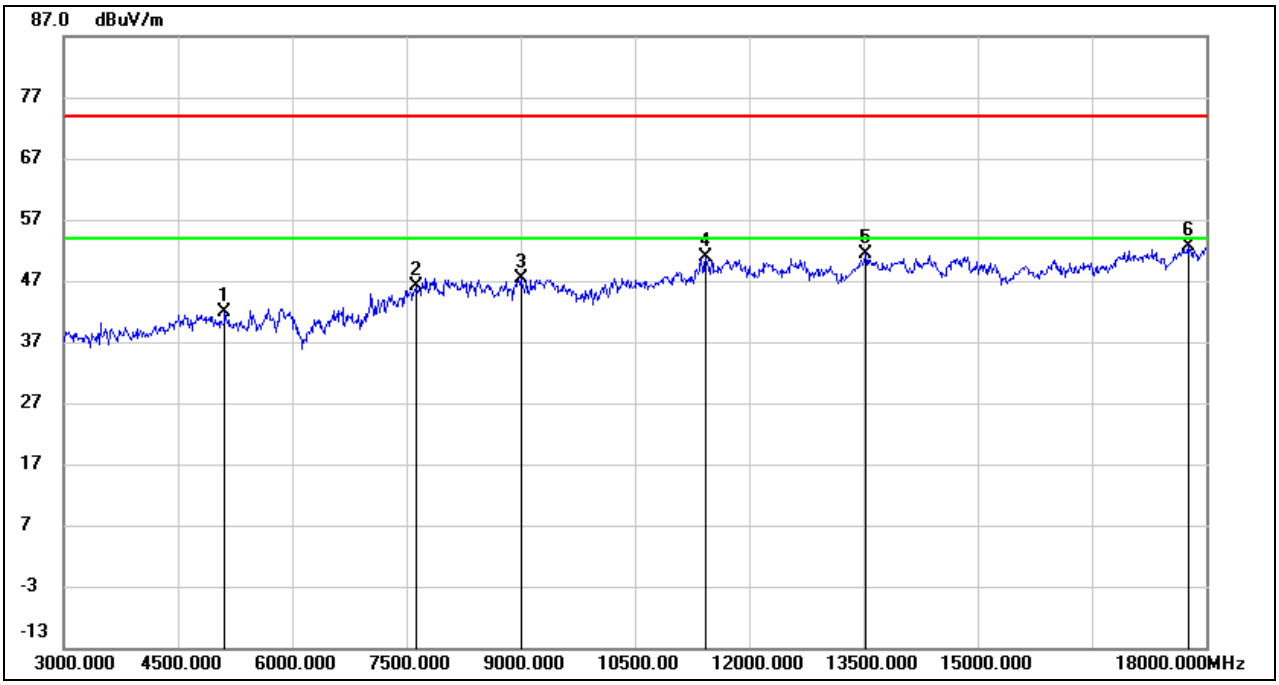
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3600.000	50.07	-3.17	46.90	74.00	-27.10	peak
2	4800.000	44.22	1.40	45.62	74.00	-28.38	peak
3	8115.000	38.25	10.13	48.38	74.00	-25.62	peak
4	11025.000	35.54	13.43	48.97	74.00	-25.03	peak
5	14745.000	34.53	17.84	52.37	74.00	-21.63	peak
6	17550.000	30.36	22.38	52.74	74.00	-21.26	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

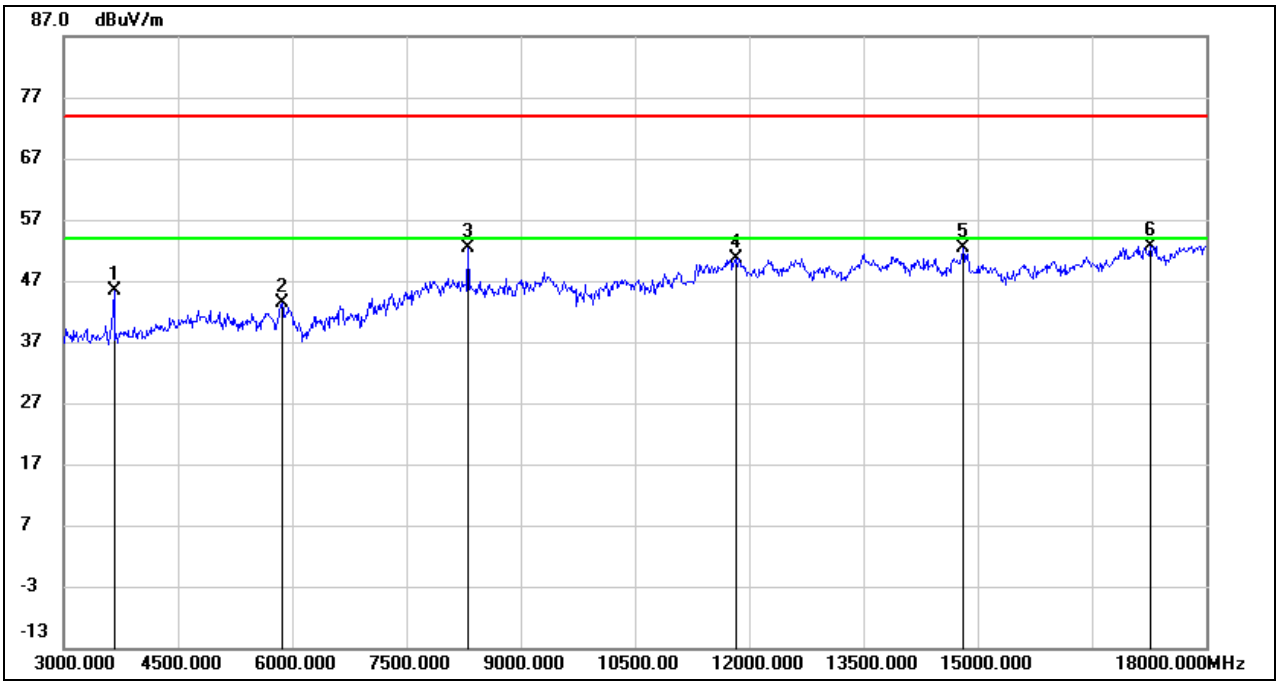
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5115.000	39.76	2.00	41.76	74.00	-32.24	peak
2	7635.000	37.93	8.12	46.05	74.00	-27.95	peak
3	9000.000	36.10	11.27	47.37	74.00	-26.63	peak
4	11430.000	36.08	14.72	50.80	74.00	-23.20	peak
5	13530.000	34.15	17.19	51.34	74.00	-22.66	peak
6	17760.000	28.70	23.82	52.52	74.00	-21.48	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

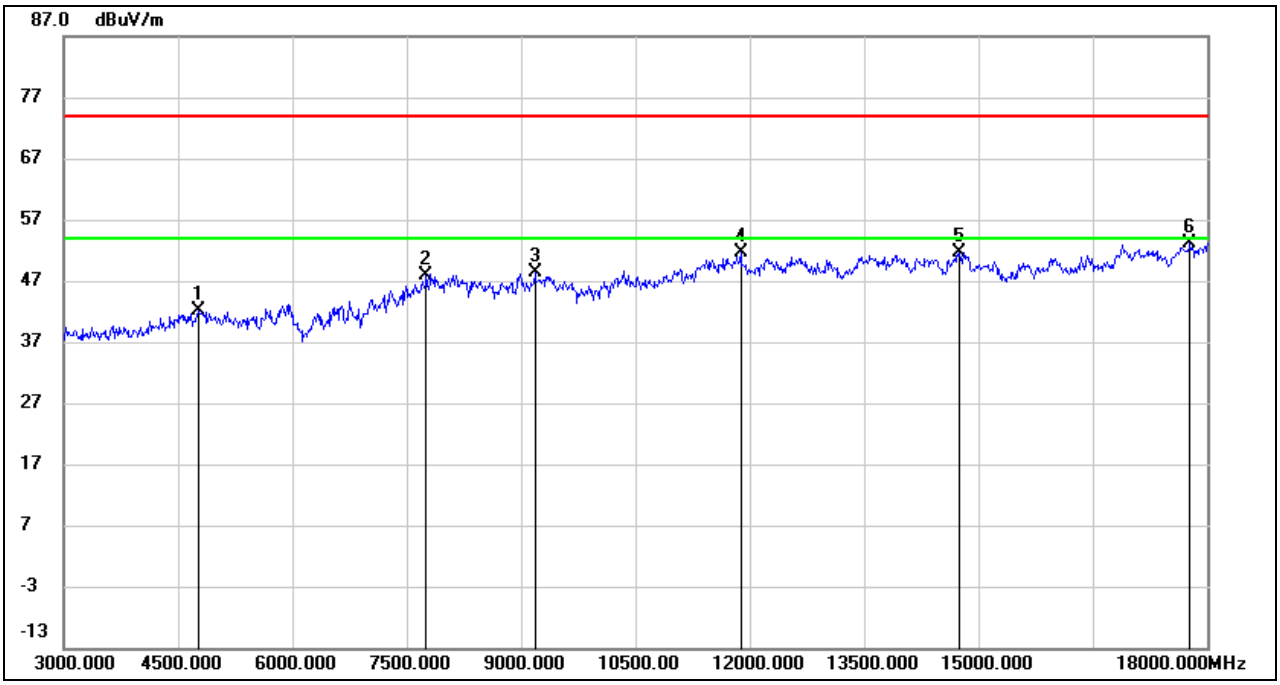
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3660.000	48.39	-3.02	45.37	74.00	-28.63	peak
2	5865.000	39.11	4.16	43.27	74.00	-30.73	peak
3	8310.000	42.84	9.66	52.50	74.00	-21.50	peak
4	11835.000	35.36	15.34	50.70	74.00	-23.30	peak
5	14805.000	34.40	18.00	52.40	74.00	-21.60	peak
6	17265.000	30.30	22.39	52.69	74.00	-21.31	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

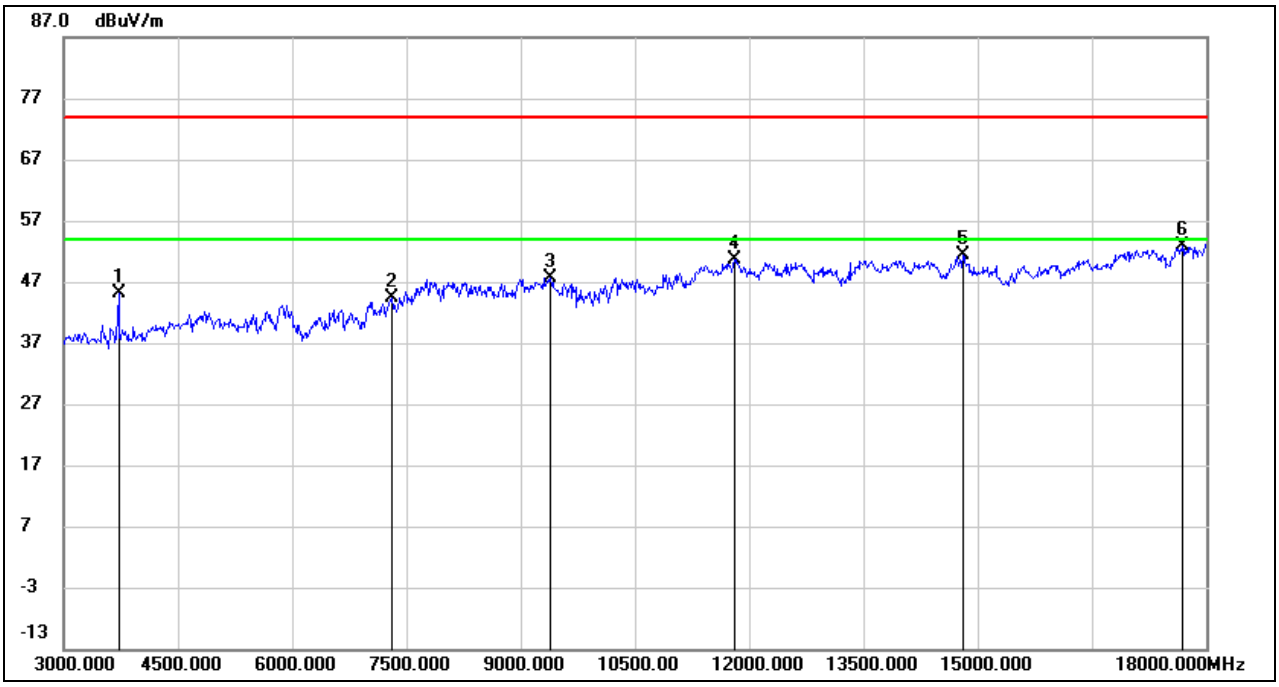
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4770.000	40.98	1.06	42.04	74.00	-31.96	peak
2	7755.000	38.98	8.94	47.92	74.00	-26.08	peak
3	9180.000	38.38	9.95	48.33	74.00	-25.67	peak
4	11880.000	36.07	15.46	51.53	74.00	-22.47	peak
5	14745.000	33.75	17.84	51.59	74.00	-22.41	peak
6	17775.000	29.18	23.91	53.09	74.00	-20.91	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3720.000	48.08	-2.84	45.24	74.00	-28.76	peak
2	7305.000	37.34	7.14	44.48	74.00	-29.52	peak
3	9390.000	36.78	10.92	47.70	74.00	-26.30	peak
4	11805.000	35.45	15.26	50.71	74.00	-23.29	peak
5	14805.000	33.41	18.00	51.41	74.00	-22.59	peak
6	17685.000	29.44	23.36	52.80	74.00	-21.20	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

5. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected High Pass Filter losses.

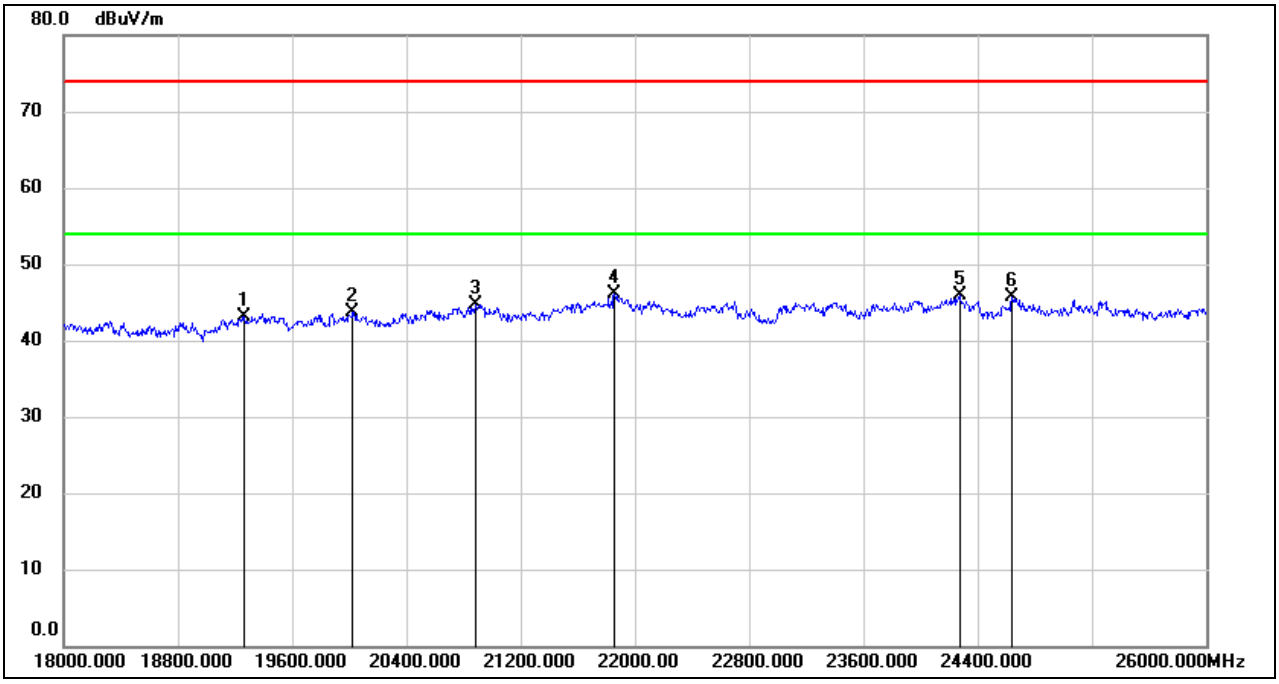
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

8.4. SPURIOUS EMISSIONS 18G ~ 26GHz

KTC ANTENNA:

8.4.1. GFSK(1Mbps) MODE

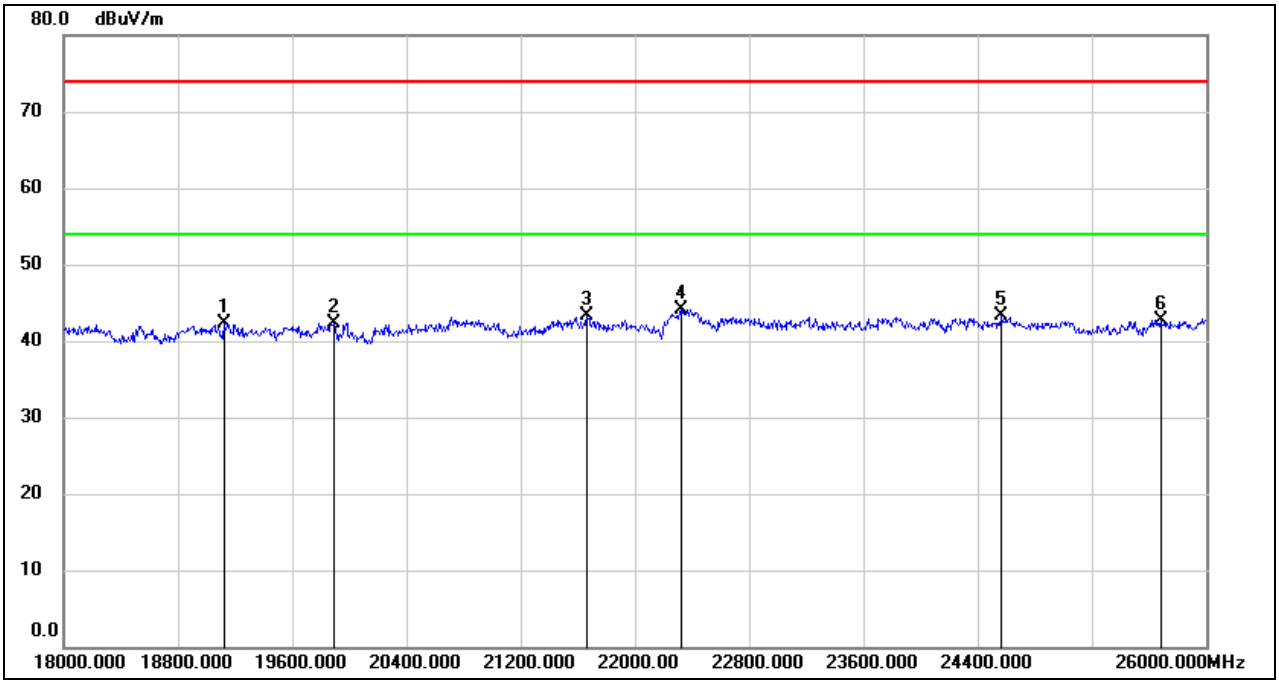
SPURIOUS EMISSIONS (LOW CHANNEL , WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19264.000	48.77	-5.57	43.20	74.00	-30.80	peak
2	20024.000	49.25	-5.47	43.78	74.00	-30.22	peak
3	20888.000	49.61	-4.98	44.63	74.00	-29.37	peak
4	21856.000	50.52	-4.39	46.13	74.00	-27.87	peak
5	24272.000	48.75	-2.79	45.96	74.00	-28.04	peak
6	24640.000	48.03	-2.32	45.71	74.00	-28.29	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

SPURIOUS EMISSIONS (LOW CHANNEL , WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19120.000	47.62	-5.38	42.24	74.00	-31.76	peak
2	19888.000	47.65	-5.36	42.29	74.00	-31.71	peak
3	21664.000	47.73	-4.45	43.28	74.00	-30.72	peak
4	22328.000	48.20	-4.11	44.09	74.00	-29.91	peak
5	24568.000	45.60	-2.33	43.27	74.00	-30.73	peak
6	25680.000	43.67	-0.93	42.74	74.00	-31.26	peak

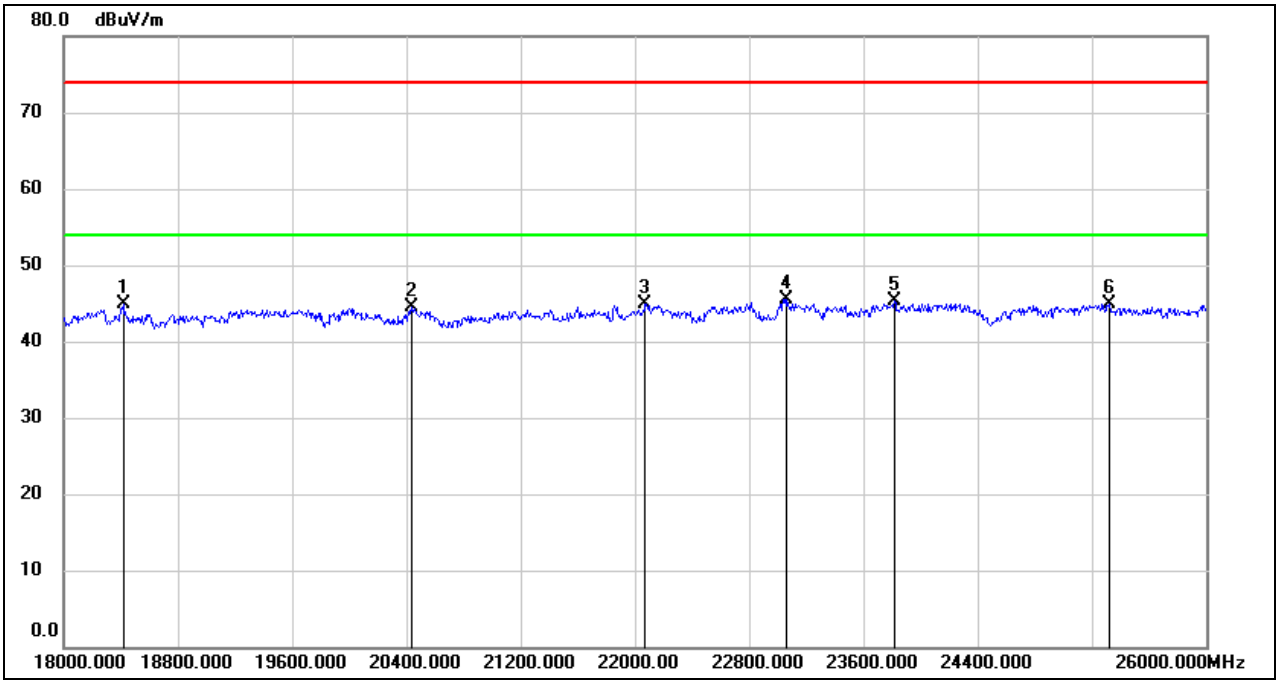
Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

Note: All the test modes, channels and antennas have been tested, only the worst data record in the report.

INNO-LINK ANTENNA:

8.4.2. GFSK(1Mbps) MODE

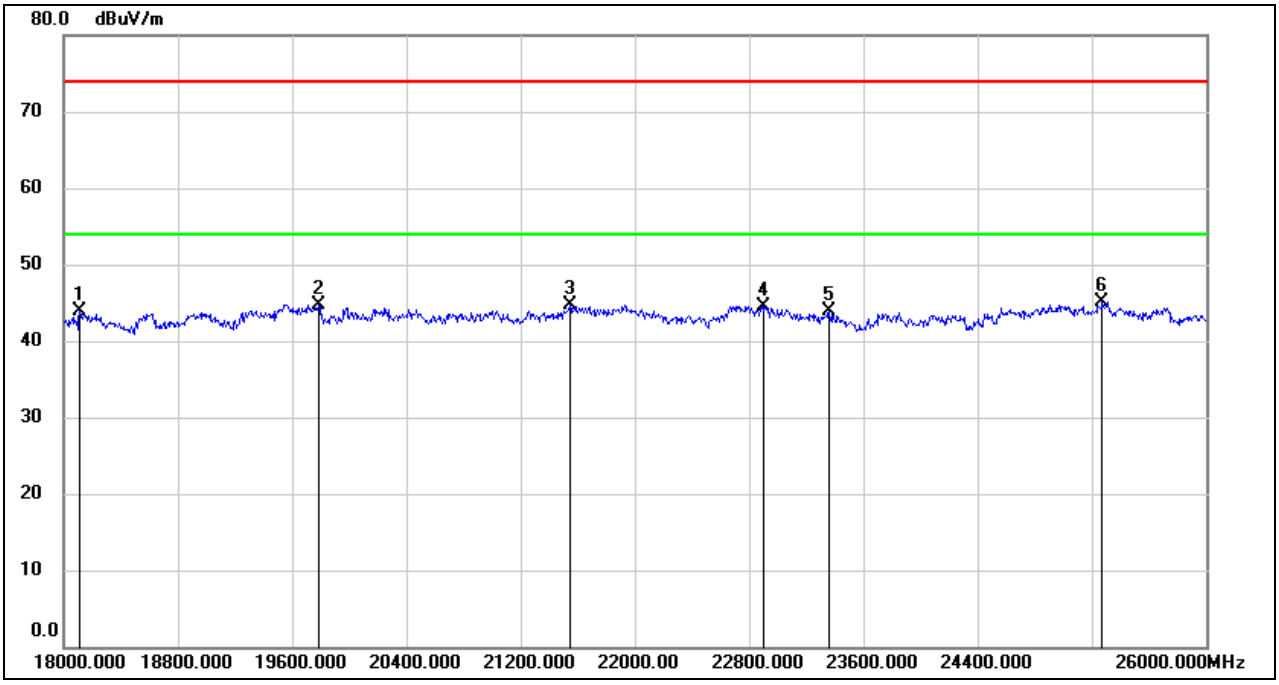
SPURIOUS EMISSIONS (LOW CHANNEL , WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18416.000	50.23	-5.35	44.88	74.00	-29.12	peak
2	20432.000	49.99	-5.42	44.57	74.00	-29.43	peak
3	22072.000	49.27	-4.41	44.86	74.00	-29.14	peak
4	23064.000	48.99	-3.42	45.57	74.00	-28.43	peak
5	23816.000	48.39	-3.08	45.31	74.00	-28.69	peak
6	25320.000	46.57	-1.70	44.87	74.00	-29.13	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

SPURIOUS EMISSIONS (LOW CHANNEL , WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18112.000	49.46	-5.47	43.99	74.00	-30.01	peak
2	19784.000	50.07	-5.28	44.79	74.00	-29.21	peak
3	21544.000	49.26	-4.63	44.63	74.00	-29.37	peak
4	22904.000	48.13	-3.54	44.59	74.00	-29.41	peak
5	23360.000	47.10	-3.26	43.84	74.00	-30.16	peak
6	25272.000	46.73	-1.67	45.06	74.00	-28.94	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

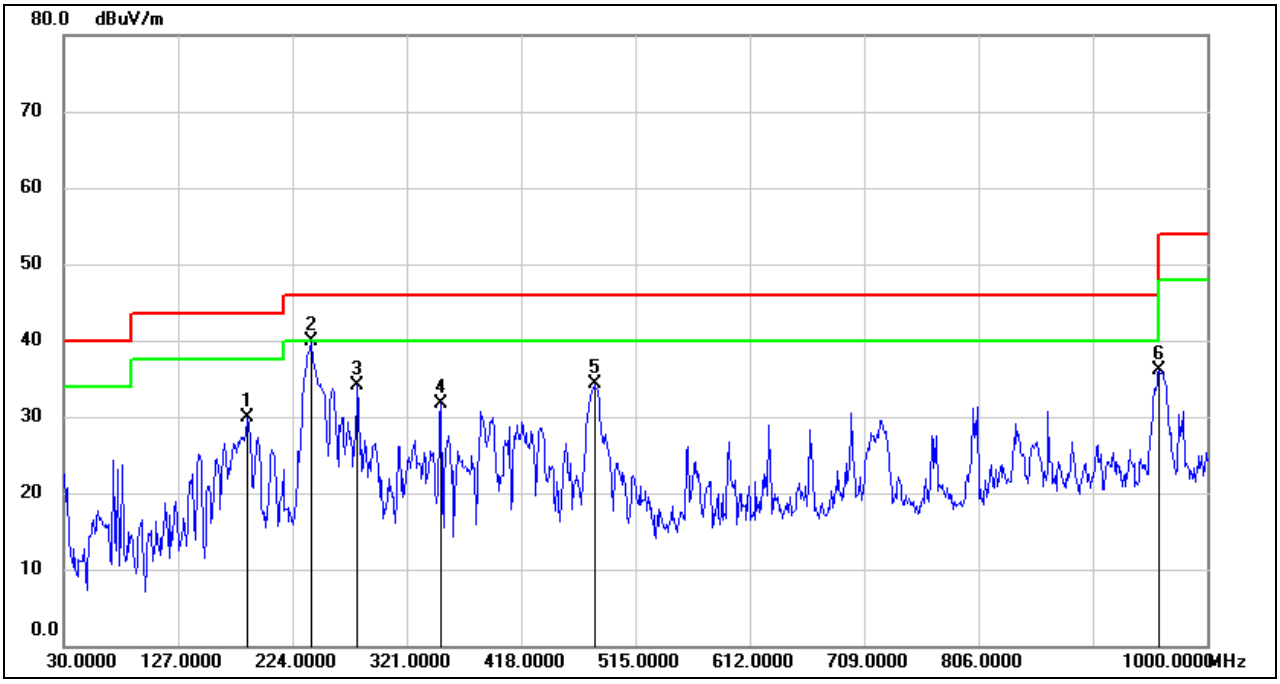
Note: All the test modes, channels and antennas have been tested, only the worst data record in the report.

8.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

KTC ANTENNA:

8.5.1. GFSK(1Mbps) MODE

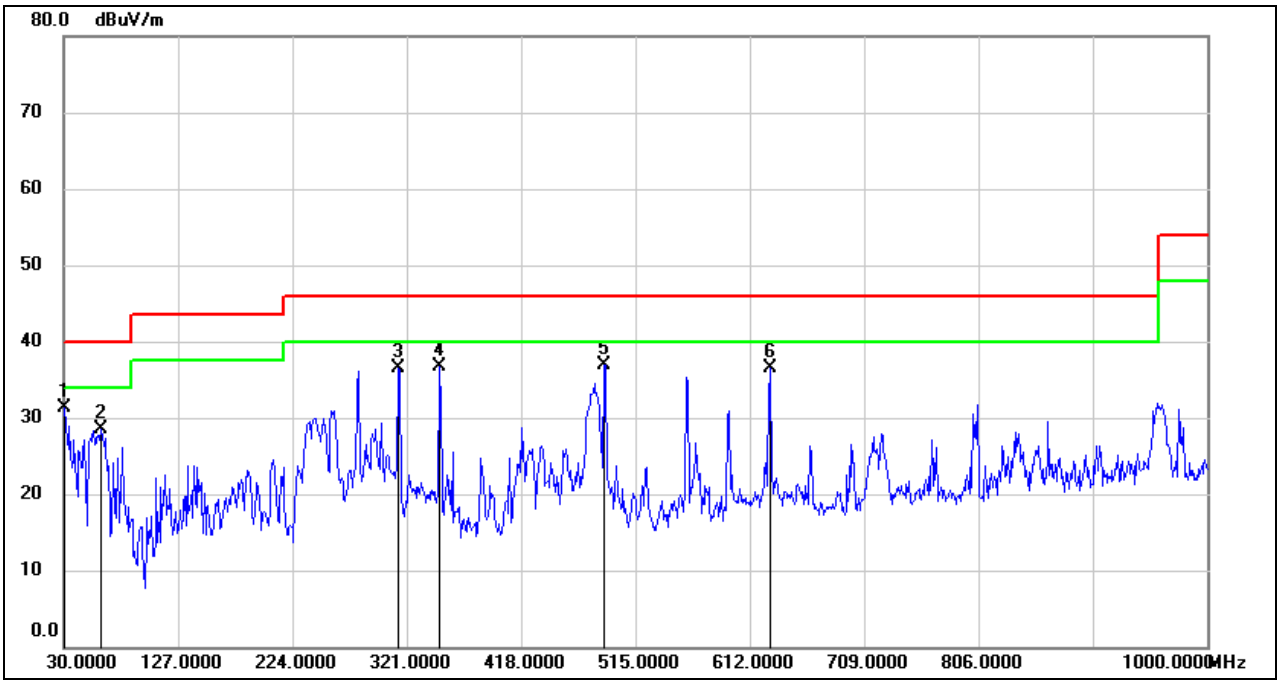
SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	185.2000	46.13	-16.26	29.87	43.50	-13.63	QP
2	240.4900	56.81	-16.99	39.82	46.00	-6.18	QP
3	279.2900	49.33	-15.18	34.15	46.00	-11.85	QP
4	350.1000	45.15	-13.52	31.63	46.00	-14.37	QP
5	480.0800	45.49	-11.26	34.23	46.00	-11.77	QP
6	959.2600	39.54	-3.51	36.03	46.00	-9.97	QP

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	48.50	-17.13	31.37	40.00	-8.63	QP
2	61.0400	48.06	-19.51	28.55	40.00	-11.45	QP
3	313.2400	50.59	-14.14	36.45	46.00	-9.55	QP
4	348.1600	50.26	-13.56	36.70	46.00	-9.30	QP
5	487.8400	47.87	-11.03	36.84	46.00	-9.16	QP
6	629.4600	44.92	-8.43	36.49	46.00	-9.51	QP

Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Note: All the test modes, channels and antennas have been tested, only the worst data record in the report.

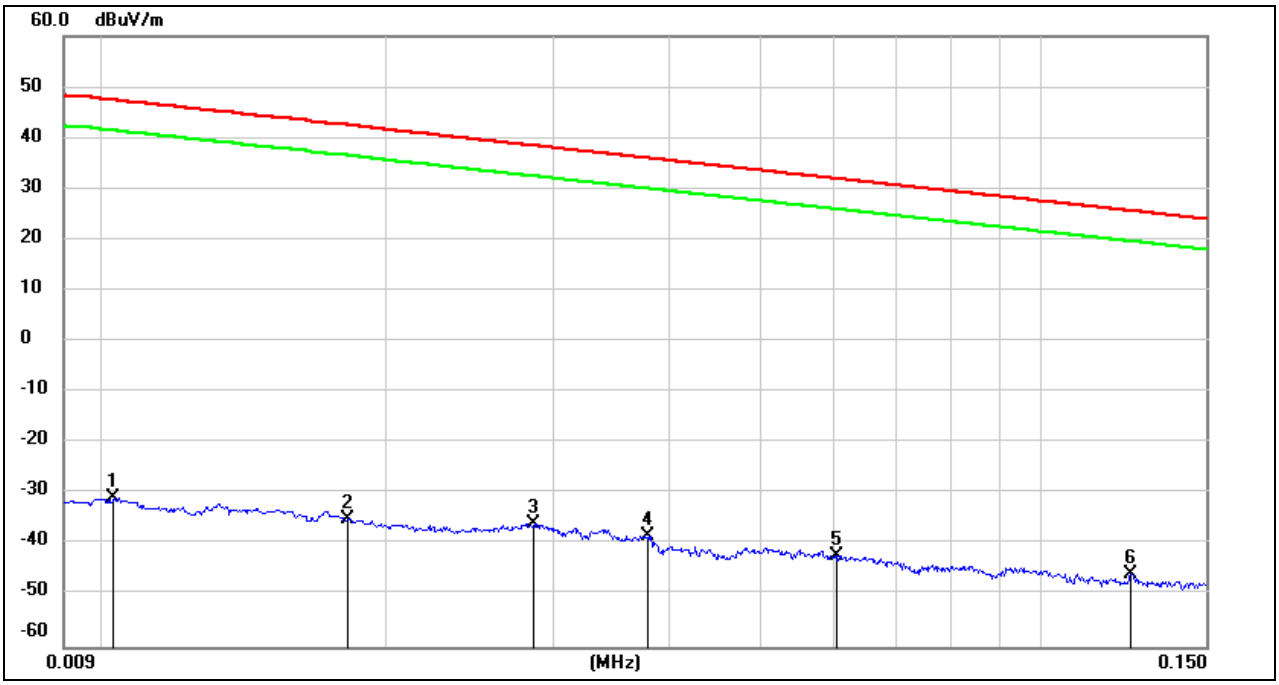
8.6. SPURIOUS EMISSIONS BELOW 30M

KTC ANTENNA:

8.6.1. GFSK(1Mbps) MODE

SPURIOUS EMISSIONS (LOW CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)

9kHz~ 150kHz



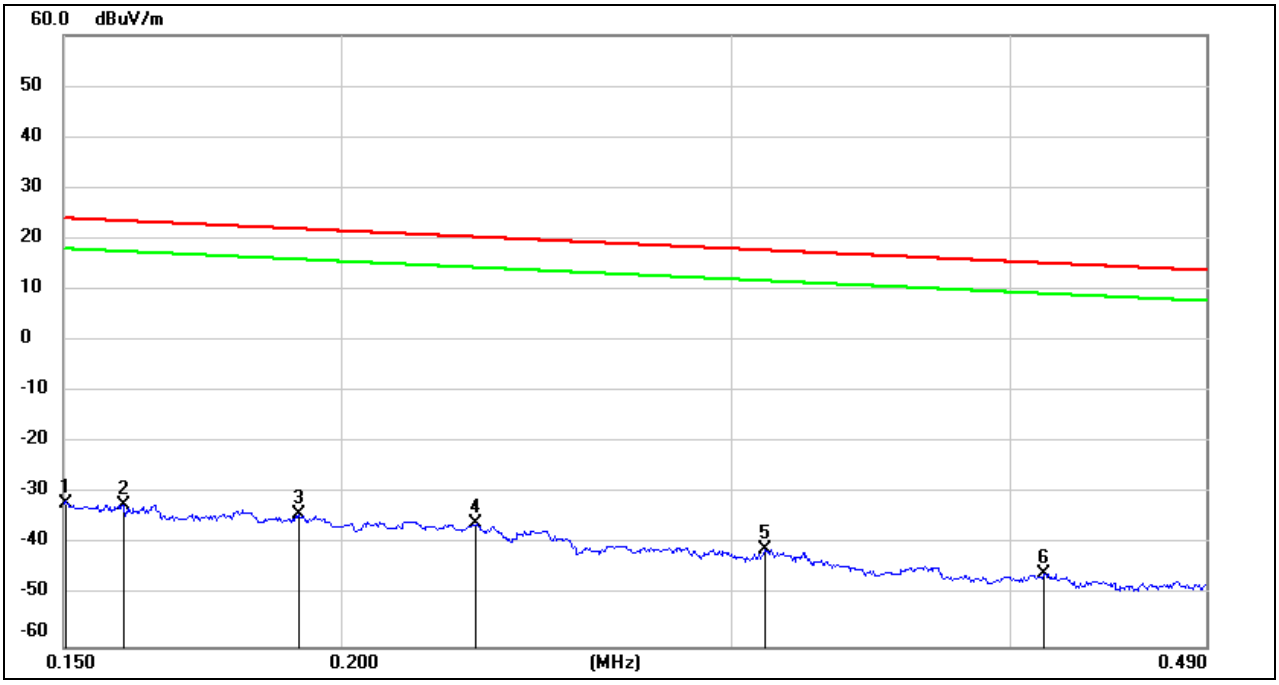
No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.0102	70.55	-101.40	-30.85	47.43	-82.35	-4.07	-78.28	peak
2	0.0181	66.35	-101.36	-35.01	42.45	-86.51	-9.05	-77.46	peak
3	0.0286	65.46	-101.38	-35.92	38.47	-87.42	-13.03	-74.39	peak
4	0.0379	63.07	-101.42	-38.35	36.03	-89.85	-15.47	-74.38	peak
5	0.0604	59.42	-101.52	-42.1	31.98	-93.60	-19.52	-74.08	peak
6	0.1246	55.89	-101.72	-45.83	25.7	-97.33	-25.80	-71.53	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

150kHz ~ 490kHz



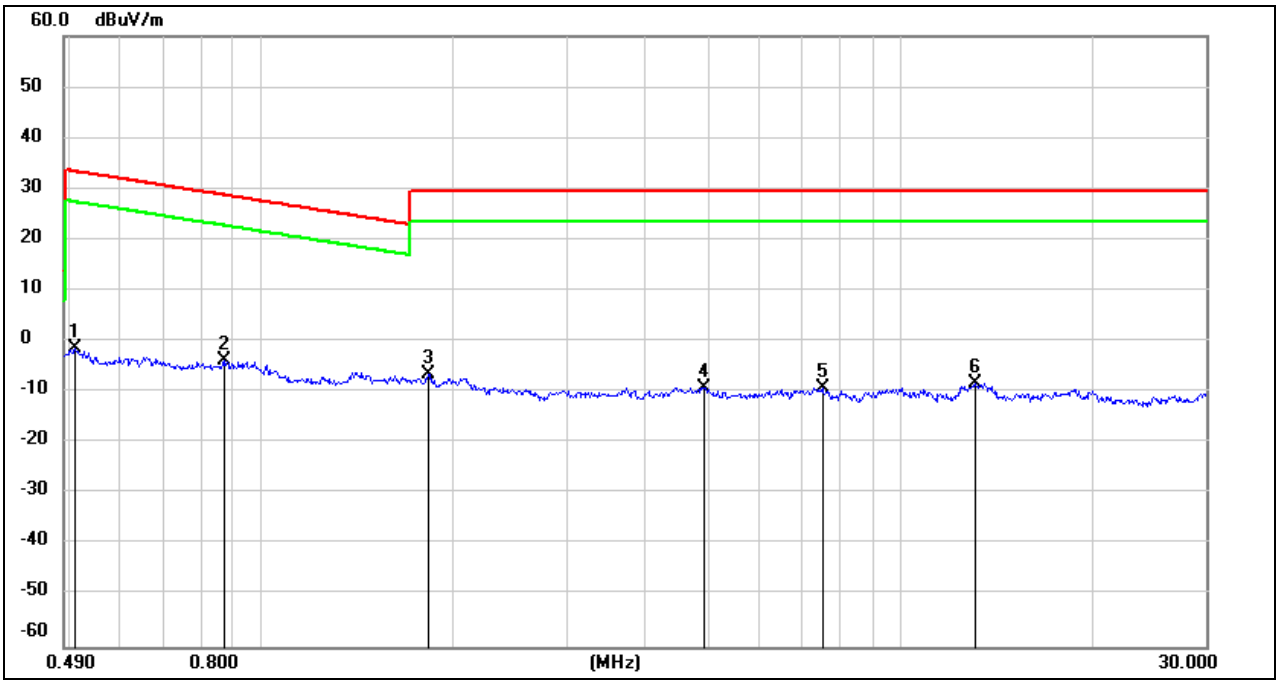
No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.1504	69.75	-101.63	-31.88	24.06	-83.38	-27.44	-55.94	peak
2	0.1595	69.36	-101.65	-32.29	23.55	-83.79	-27.95	-55.84	peak
3	0.1915	67.52	-101.70	-34.18	21.96	-85.68	-29.54	-56.14	peak
4	0.2300	66.01	-101.77	-35.76	20.37	-87.26	-31.13	-56.13	peak
5	0.3104	60.86	-101.86	-41	17.76	-92.50	-33.74	-58.76	peak
6	0.4142	56.23	-101.98	-45.75	15.26	-97.25	-36.24	-61.01	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

490kHz ~ 30MHz



No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.5106	60.80	-62.07	-1.27	33.44	-52.77	-18.06	-34.71	peak
2	0.8736	58.37	-62.19	-3.82	28.78	-55.32	-22.72	-32.60	peak
3	1.8205	55.45	-61.90	-6.45	29.54	-57.95	-21.96	-35.99	peak
4	4.9165	52.38	-61.48	-9.1	29.54	-60.60	-21.96	-38.64	peak
5	7.5429	52.08	-61.14	-9.06	29.54	-60.56	-21.96	-38.60	peak
6	13.0907	52.63	-60.93	-8.3	29.54	-59.80	-21.96	-37.84	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All the test modes, channels and antennas have been tested, only the worst data record in the report.

9. ANTENNA REQUIREMENTS

Applicable requirements

Please refer to FCC §15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Complies

Appendix A: Maximum conducted output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
LE 1M	Ant1	2402	-0.01	<=30	PASS
		2440	0.45	<=30	PASS
		2480	0.31	<=30	PASS
LE 2M	Ant1	2402	-0.1	<=30	PASS
		2440	0.35	<=30	PASS
		2480	0.25	<=30	PASS

Appendix B: Duty Cycle

Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
LE 1M	2.13	2.50	0.852	85.2%	0.696	0.47	0.5
LE 2M	1.07	1.87	0.572	57.2%	2.43	0.93	1

Note:
Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)
Where: T is On Time (transmit duration)
If that calculated VBW is not available on the analyzer then the next higher value should be used.

Test Graphs

BLE_BT5.0_Ant1_2440

BLE_BT5.0_Ant1_2440

END OF REPORT